

101.702-24/06 – including *Taq* pol., IFU-01
101.702-24u/06u – without *Taq* pol., IFU-02

Visit Visit <https://labproducts.caredx.com> for
“Instructions for Use” (IFU)

Lot No.: **4K4**

Lot-specific information

Olerup SSP[®] HLA-A-B-C SSP Combi Tray

Product number:	101.702-24/06 – including <i>Taq</i> pol. 101.702-24u/06u – without <i>Taq</i> pol.
Lot number:	4K4
Expiry date:	2023-11-01
Number of tests:	24 tests – Product No. 101.702-24/24u 6 tests – Product No. 101.702-06/06u
Number of wells per test:	95+1
Storage - pre-aliquoted primers:	dark at -20°C
- PCR Master Mix:	-20°C
- Adhesive PCR seals	RT
- Product Insert	RT

This Product Description is only valid for Lot No. 4K4.

Complete product documentation consists of generic Instructions for Use (IFU), lot specific Product Insert, Worksheet and Certificate.

CHANGES COMPARED TO THE PREVIOUS OLERUP SSP[®] HLA-A-B-C SSP COMBI TRAY LOT (8F0)

The **HLA-A low resolution** primer set, specificity and interpretation tables have been updated for the HLA-A alleles described since the previous *Olerup SSP[®]* HLA-A-B-C SSP Combi Tray lot was made (**Lot No. 8F0**). The kit design is based on IMGT/HLA database 3.36.0.

The primers of the wells detailed below have been exchanged, added or modified compared to the previous lot.

Well	5'-primer	3'-primer	rationale
3	Removed, added	Removed	Redundant 5'- and 3'-primers removed. 5'-primer added for the A*03:204 allele.
18	-	Added	3'-primer added for the A*33:135 allele. 3'-primer added for the A*33:141 allele.
20	Added	-	5'-primer added for the A*68:105 allele.

The **HLA-B low resolution** primer set, specificity and interpretation tables have been updated for the HLA-B alleles described since the previous *Olerup SSP[®]* HLA-A-B-C SSP Combi Tray lot was made (**Lot No. 8F0**). The kit design is based on IMGT/HLA database 3.36.0.

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The primers of the wells detailed below have been exchanged, added or modified compared to the previous lot.

Well	5'-primer	3'-primer	rationale
26	-	Added	3'-primer added for the B*08:146 allele.
28	Modified	Modified, added	3'-primer modified for improved HLA-specific amplification. 5'- and 3'-primers modified for improved yield. 3'-primer added for the B*44:07 allele.
31	-	Removed	Redundant 3'-primer removed.
38	Modified	-	5'-primer modified, and positive control primer pair exchanged for improved HLA-specific amplification and reduced tendency of primer oligomer formation.
50	Modified	-	5'-primer modified for improved HLA-specific amplification.
51	-	Added	3'-primer added for the B*41:06 allele.
55	Modified	-	5'-primer modified for reduced tendency of primer oligomer formation.
56	Removed	-	Redundant 5'-primer removed.
58	Added	Added	5'-primer added for improved allelic resolution of the B*52 alleles. 3'-primer added for the B*56:54 allele.
63	Removed, added	-	Redundant 5'-primer removed. 5'-primer added for improved allelic resolution of the B*44:18 allele.
65	Modified	-	5'-primer modified for reduced tendency of primer oligomer formation.

The **HLA-C low resolution** specificity and interpretation tables have been updated for the HLA-C alleles described since the previous *Olerup* SSP[®] HLA-A-B-C SSP Combi Tray lot was made (**Lot No. 8F0**). The kit design is based on IMGT/HLA database 3.36.0.

The primers of the wells detailed below have been exchanged, added or modified compared to the previous lot.

Well	5'-primer	3'-primer	rationale
88	Added	-	5'-primer added for the C*14:96 allele.
91	-	Modified	3'-primer modified for improved yield.
94	Added	-	5'-primer added for the C*01:177 allele.

Change in revision R01 compared to R00:

1. Primer mix 63 may amplify B*44:05 samples. A footnote has been added in the Specificity Table.

Change in revision R02 compared to R01:

1. In primer mix 70, the serology group information was updated to indicate the Bw4 reactivity.

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Lot-specific information

Well **96** contains Negative Control primer pairs, that will amplify a majority of the *Olerup* SSP[®] HLA Class I, DRB, DQB1, DPB1 and DQA1 amplicons as well as all the amplicons generated by the control primer pairs matching the human growth hormone gene.

HLA-specific PCR product sizes range from 75 to 200 base pairs.
The PCR product generated by the positive control primer pair is 200 base pairs.

Length of PCR product	105	200	105	80	75	80	85
5'-primer¹	164	340	440	45	45	43	36
	5'-CAC ^{3'}	5'-Agg ^{3'}	5'-TTA ^{3'}	5'-Tgg ^{3'}	5'-Tgg ^{3'}	5'-Tgg ^{3'}	5'-TAC ^{3'}
							36
							5'-TAT ^{3'}
3'-primer²	231	2nd I	507	59	58	57	47
	5'-TgC ^{3'}	5'-AAA ^{3'}	5'-TTg ^{3'}	5'-CTC ^{3'}	5'-ggC ^{3'}	5'-CTC ^{3'}	5'-ACA ^{3'}
							48
							5'-gCA ^{3'}
							48
							5'-gCC ^{3'}
							52
							5'-TgT ^{3'}
A*	+	+	+				
B*	+	+	+				
C*	+	+	+				
DRB1				+	+		
DRB3				+	+		
DRB5				+			
DQB1					+		
DPB1						+	
DQA1							+

¹The nucleotide position for HLA class I genes and the codon for HLA class II genes, in the 2nd or 3rd exon, matching the specificity-determining 3'-end of the primer is given. Nucleotide and codon numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

²The nucleotide position for HLA class I genes and the codon for HLA class II genes, in the 2nd or 3rd exon or the 2nd intron, matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Nucleotide and codon numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

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Lot-specific information

PRODUCT DESCRIPTION

HLA-A-B-C SSP Combi Tray

CONTENT

The primer set contains 5'- and 3'-primers for grouping the HLA-A*01:01 to A*80:05 alleles into the corresponding serological groups A1 to A80.

The primer set contains 5'- and 3'-primers for grouping the B*07:02 to B*83:01 alleles into the corresponding serological groups B7 to B81 as well as primer pairs for recognizing the Bw4 and Bw6 sequence motifs.

The primer set contains 5'- and 3'-primers for grouping the HLA-C*01:02 to C*18:12 alleles into the groups C*01:xx to C*18:xx.

PLATE LAYOUT

Each test consists of 96 PCR reactions in a 96 well PCR plate.

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56
57	58	59	60	61	62	63	64
65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88
89	90	91	92	93	94	95	NC

The 96 well PCR plate is marked with 'A-B-C' in silver/gray ink.

Well No. 1 is marked with the Lot No. '4K4'.

Wells 1 to 24 – HLA-A low resolution primers.

Wells 25 to 72 – HLA-B low resolution primers.

Wells 73 to 95 – HLA-C low resolution primers.

Well 96 – Negative Control.

A faint row of numbers is seen between wells 1 and 2 or wells 7 and 8 of the PCR trays. These stem from the manufacture of the trays and should be disregarded.

The PCR plates are covered with a PCR-compatible foil.

INTERPRETATION

Only HLA-A alleles will be amplified by the 24 wells of the HLA-A low resolution primer set, **wells 1 to 24**, except that a few HLA-B and HLA-C alleles will be amplified by some primer mixes. For further details see Specificity Table.

Only HLA-B alleles will be amplified by the 48 wells of the HLA-B low resolution, primer set, **wells 25 to 72**, except that a few HLA-A and HLA-C alleles will be amplified by some primer mixes. For further details see Specificity Table.

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Lot-specific information

Only HLA-C alleles will be amplified by the 23 wells of the HLA-C low resolution primer set, **wells 73 to 95**, except that a few HLA-A and HLA-B alleles will be amplified by some primer mixes.

For further details see Specificity Table.

UNIQUELY IDENTIFIED ALLELES

All the HLA-A alleles, i.e. **A*01:01 to A*80:05**, recognized by the HLA Nomenclature Committee in April 2019^{1,2} will be amplified by the primers in the HLA-A low resolution primer set, **wells 1 to 24**. The HLA-A alleles will be grouped into their corresponding serological specificities³.

All the HLA-B alleles, i.e. **B*07:02 to B*83:01**, recognized by the HLA Nomenclature Committee in April 2019^{1,2} will be amplified by the primers in the HLA-B low resolution primer set, **wells 25 to 72**. The HLA-B alleles will be grouped into their corresponding serological specificities³.

All the HLA-C alleles, i.e. **C*01:02 to C*18:12**, recognized by the HLA Nomenclature Committee in April 2019^{1,2} will be amplified by the primers in the HLA-C low resolution primer set, **wells 73 to 95**. The HLA-C alleles will be grouped into the C*01:xx to C*18:xx groups³.

Notes on Bw assignment

The Bw4 and Bw6 status of HLA-B alleles is based their serological type:

	Serological Type
Bw4	B5, B5102, B5103, B13, B17, B27, B37, B38(16), B44(12), B47, B49(21), B51(5), B52(5), B53, B57(17), B58(17), B59, B63(15), B77(15)
Bw6	B7, B703, B8, B14, B18, B22, B2708, B35, B39(16), B3901, B3902, B40, B4005, B41, B42, B45(12), B46, B48, B50(21), B54(22), B55(22), B56(22), B60(40), B61(40), B62(15), B64(14), B65(14), B67, B70, B71(70), B72(70), B73, B75(15), B76(15), B78, B81, B82

However, according to the HLA Dictionary⁴ there are several exceptions to these associations. This product contains reactions specific to the sequences that code for the Bw4 and Bw6 epitopes. A small number of alleles classified as Bw4 or Bw6 in the HLA Dictionary are not amplified neither by the Bw4 nor the Bw6 primer mix:

Bw Reactivity	Allele
Bw6	B*15:377Q, B*35:01:39, B*35:02:09, B*39:01:15

¹HLA-A, HLA-B and HLA-C alleles listed on the IMGT/HLA web page 2019-April-17, release 3.36.0, www.ebi.ac.uk/imgt/hla.

²Alleles that have been deleted from or renamed in the official WHO HLA Nomenclature up to and including the last IMGT/HLA database release can be retrieved from web page <http://hla.alleles.org/alleles/deleted.html>.

³The HLA-A, HLA-B, HLA-C alleles will be grouped into their corresponding serological specificities, except that following alleles give rise to identical amplification patterns.

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The following alleles can be separated by the full A-B-C primer set or by the respective high resolution SSP primer sets.

Alleles	Alleles
A*01:26, 01:136, 01:192, 11:94, 11:112, 11:211, 11:290, 11:326	B*53:30, 57:45, 57:51, 57:69
A*01:28, 01:229, 01:299, 11:282	B*53:39, 58:100
A*01:43, 11:271	B*55:01:07, 55:02:01:01-55:02:10, 55:07, 55:10, 55:12, 55:16, 55:19, 55:26, 55:30, 55:35, 55:37, 55:39, 55:41-55:43, 55:47-55:48, 55:50, 55:57, 55:61-55:63, 55:65, 55:67, 55:69-55:72, 55:77, 55:80, 55:82-55:83N, 55:88-55:89N, 55:96, 56:66
A*11:11, 34:19	B*55:04, 55:08, 55:13, 55:27, 55:46, 55:49, 55:81, 55:86, 56:01:05, 56:01:13, 56:15, 56:19N, 56:22
A*11:116, 11:140, 11:199:01-11:199:02, 11:222, 66:23	B*55:23, 55:32, 56:18, 56:31-56:32, 56:50
A*23:14:01-23:14:02, 24:24, 24:71, 24:315, 24:392	B*57:67:01, B*58:36
A*23:66, 24:14:01:01-24:15, 24:51-24:53, 24:57, 24:64, 24:94, 24:114, 24:138, 24:188, 24:222N, 24:228, 24:291, 24:296, 24:304, 24:316, 24:324, 24:412, C*04:01:03	B*57:120, 58:01:01:01-58:01:02, 58:01:04-58:01:15, 58:01:17-58:01:31, 58:04-58:05, 58:10N-58:15, 58:19, 58:21-58:24, 58:29, 58:31N-58:33, 58:35, 58:37, 58:39N-58:42, 58:45:01-58:45:02, 58:47-58:59:02, 58:62-58:63, 58:66-58:72N, 58:74-58:75, 58:77, 58:79-58:83, 58:85-58:93N, 58:95-58:99, 58:101-58:103, 58:105-58:107
A*30:01:01:01-30:04:02, 30:06-30:07, 30:09-30:20, 30:22-30:54, 30:56-30:88, 30:90-30:124, 30:126-30:139, 30:141-30:149, 30:151-30:153, B*07:260	C*01:125, 14:58
A*31:08, 33:53	C*01:156, B*07:239, B*14:03
A*31:109, 33:125, 33:131	C*01:169:02, 03:94
B*07:349, 42:05:01-42:05:02	C*03:02:10, 03:264, B*44:274
B*08:26:01-08:26:02, 08:50, 08:62, 08:85, 08:94, 42:07, 42:24, 42:26	C*05:206, 17:05
B*13:35, 13:59, 13:71, 13:108, 44:135, 44:158, 44:184	C*12:02:14-12:02:15, 12:02:19, 12:18:02, 12:222, 12:224, B*67:02
B*14:08:01-14:08:02, 14:55, 39:01:19, 39:25N, 39:30, 39:32-39:34, 39:47, 39:50, 39:74, 39:82, 39:102, 39:107, 39:112, 39:128, 39:136	C*12:02:29, 12:49, 12:123, B*57:01:24
B*18:29, 18:72:01-18:72:03, 18:92, 18:102, 35:01:55, 35:32:01-35:32:03, 35:37, 35:53N, 35:64:01-35:64:02, 35:68:01-35:68:02, 35:99, 35:118-35:119, 35:174, 35:369, 35:409, 35:433	C*12:03:34:01-12:03:34:02, B*15:510
B*40:430, 48:03:01-48:03:02, 48:40	C*14:02:32, 14:06, 14:08-14:09, 14:28:01-14:28:02, 14:53, 14:63, 14:105Q, A*29:86, A*30:62, A*33:63, B*18:64, B*35:183, B*35:252, B*39:114, B*39:140, B*40:138, B*41:59

⁴Holdsworth, R Hurley, C K Marsh, S G E Lau, M Noreen, H J Kempenich, J H Setterholm, M Maiers, M: 'The HLA dictionary 2008 : a summary of HLA-A , -B , -C , -DRB1 / 3 / 4 / 5 , and -DQB1 alleles and their association with serologically defined HLA-A, -B, -C, -DR and -DQ antigens', Tissue Antigens, 2009, 73(2), pp. 95-170.

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SPECIFICITY TABLE

HLA-A low resolution primer set

Specificities and sizes of the PCR products of the 24 primer mixes used for HLA-A low resolution SSP typing

Primer Mix	Size of spec. PCR product ¹	Size of control band ²	HLA-A serology ³	Amplified HLA-A alleles ^{4,5}
1⁵	120 bp, 145 bp, 225 bp	800 bp	1, 36	*01:01:01:01:01:04:01:02N, 01:06-01:33, 01:35-01:305, 03:18, 03:135, 11:94, 11:112, 11:211, 11:226, 11:271, 11:282, 11:290, 11:326, 25:59, 26:120, 36:01-36:08
2	175 bp, 215 bp, 255 bp, 365 bp, 415 bp	800 bp	2, 203, 210, 19, 28,	*02:01:01:01:02:01:15, 02:01:17-02:01:19, 02:01:21-02:01:81, 02:01:83-02:22:02, 02:24:01-02:35:01, 02:35:03-02:47, 02:49-02:77, 02:78 ^w , 02:79:01-02:97:02, 02:99, 02:101:01-02:128, 02:130-02:570:02, 02:572-02:643N, 02:645-02:828, 02:830-02:835, 02:837
3⁶	205 bp, 235 bp	1070 bp	1, 3, 11, 31, 32, 34, 36	*01:12, 01:19, 01:21, 01:126, 01:200, 01:244, 02:338, 03:01:01:01:03:17:02, 03:19-03:74, 03:76-03:94, 03:96-03:134, 03:136-03:176, 03:178N-03:186, 03:188-03:193, 03:195-03:199, 03:201-03:214, 03:216-03:224, 03:226-03:248, 03:250-03:259, 03:261-03:321, 03:323N-03:342N, 03:344-03:346, 03:348-03:350, 11:03, 11:20, 11:25:01-11:25:02, 11:60, 11:130, 11:158, 11:175, 11:183, 11:209, 24:92, 31:03 ^w -31:04 ^w , 32:04, 33:49 ^w , 33:144 ^w , 33:179 ^w , 34:02:01:01-34:04, 34:07-34:10N, 34:13, 34:15, 34:20-34:22, 36:02, 68:103:01-68:103:02, 74:23
4	190 bp	800 bp	1, 3, 11, 30, 36, 68	*01:01:01:01:01:01:22, 01:01:24-01:01:47, 01:01:49-01:01:64, 01:01:67-01:01:78, 01:01:80-01:04:01:02N, 01:06-01:07, 01:09:01:01:01:11N, 01:13, 01:15N ^w , 01:16N-01:18N, 01:20-01:29, 01:31N-01:33, 01:35-01:78, 01:80-01:98, 01:100-01:144, 01:146, 01:148, 01:150-01:158, 01:160N-01:166, 01:168-01:177, 01:179N-01:199, 01:201-01:204, 01:206-01:207, 01:209-01:213, 01:215-01:227, 01:229-01:235, 01:237-01:243, 01:245-01:266:02, 01:268-01:270, 01:272-01:278, 01:280-01:305, 02:78, 02:169, 02:829, 03:12, 03:18, 03:88, 03:135, 11:01:01:01-11:27, 11:29-11:52Q, 11:54:01-11:332, 25:43, 25:59, 26:19, 26:72, 26:184, 29:67, 30:08:01-30:08:02, 30:150, 32:64, 34:19, 36:04, 66:23, 68:13:01, 68:66:01-68:66:02, 68:134, 68:178, 74:19, C*03:365, C*12:131
5	160 bp, 335 bp, 505 bp	1070 bp	3, 9, 23, 24, 2403, 29, 31, 32	*01:301, 03:15, 03:19, 03:30, 03:152, 03:273, 03:347, 11:139, 11:325, 23:01:01:01-23:68, 23:70-23:93, 24:02:01:01-24:11N, 24:13:01-24:15, 24:17-24:64, 24:66-24:210, 24:212-24:448N, 29:07, 29:49, 31:08, 31:29, 32:05, 32:79, 33:19, 33:53, C*04:01:03
6^{7,9}	135 bp, 200 bp	800 bp	9, 23, 24, 29, 80	*11:166, 23:01:01:01-23:56, 23:58-23:65, 23:67-23:68, 23:70-23:93, 24:24, 24:71, 24:315, 24:392,

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				29:07, 29:49, 31:29, 31:85, 32:72, 80:01:01:01-80:05, B*18:27
7	175 bp, 205 bp	1070 bp	2, 3, 9, 23, 24, 2403, 26	*01:301, 02:17:02 ^w -02:17:04 ^w , 02:804, 03:347, 11:139, 23:14:01-23:14:02, 24:02:01:01-24:11N, 24:13:01-24:13:02, 24:17-24:50, 24:54-24:56, 24:58-24:63, 24:66-24:91, 24:93, 24:95-24:113, 24:115-24:137, 24:139-24:187, 24:189-24:210, 24:212-24:221, 24:223-24:227, 24:229-24:290, 24:292-24:295, 24:297-24:303N, 24:305-24:315, 24:317-24:323N, 24:325-24:411, 24:413-24:448N, 26:16, 33:19, 33:119, 68:45, 68:117
8	165 bp, 200 bp	800 bp	2, 3, 10, 11, 25, 26, 28, 32, 34, 66, 68, 69	*01:51, 02:55, 02:527, 02:582, 02:644, 02:741, 02:815, 03:24, 03:50, 11:10, 11:183, 11:191, 11:269, 25:01:01:01-25:16, 25:18-25:33, 25:35- 25:45, 25:47-25:53, 25:55-25:58, 25:60, 26:01:01:01-26:01:47, 26:01:49-26:06, 26:08:01- 26:15, 26:17-26:18, 26:20-26:43:02, 26:45-26:63, 26:65-26:71N, 26:73-26:88, 26:90-26:91, 26:93- 26:176, 26:178-26:183, 29:28, 32:15, 33:51, 34:01:01:01-34:18, 34:20-34:22, 66:01:01:01- 66:22, 66:24-66:36, 68:01:01:01-68:177, 68:179- 68:210N, 69:01:01:01-69:05
9^{5,8}	80 bp	800 bp	2, 3, 25, 32	*01:298, 02:81, 02:124, 02:829, 25:01:01:01-25:45, 25:47-25:58, 25:60, 32:01:01:01-32:02, 32:04, 32:06-32:37, 32:39-32:59, 32:61-32:70, 32:72- 32:77, 32:81-32:106, 32:108-32:126N, B*07:81, B*08:52, B*18:67, B*38:41, B*38:67, B*51:185, B*53:05:01-53:05:02, B*53:16, B*53:33, B*57:60
10^{5,9}	80 bp, 240 bp	800 bp	10, 26, 43	*01:43, 01:51, 02:644, 11:17, 11:40, 11:223, 11:271, 25:59, 26:01:01:01-26:02:02, 26:04, 26:07:01-26:20, 26:22-26:29, 26:31-26:43:02, 26:45-26:77, 26:79-26:91, 26:93-26:110, 26:112- 26:176, 26:178-26:184, 29:105, 33:13, 33:48, 43:01, 68:84
11⁵	80 bp, 175 bp, 500 bp	1070 bp	1, 9, 10, 11, 26, 31, 34, 66	*01:13, 01:26, 01:28, 01:136, 01:176, 01:192, 01:229, 01:299, 03:63, 03:88, 11:01:01:01-11:27, 11:29-11:52Q, 11:54:01-11:270, 11:272Q-11:332, 24:19, 24:44, 26:03:01, 26:06, 26:21, 26:78, 26:92, 26:111, 26:152, 26:177, 30:125, 30:140, 34:01:01:01-34:08, 34:10N-34:22, 66:01:01:01- 66:01:05, 66:04-66:11, 66:13-66:14, 66:17-66:20, 66:22-66:24, 66:27N, 66:29-66:33, 66:35-66:36, 69:02, 74:30, 80:02
12⁵	125 bp, 160 bp, 190 bp	800 bp	3, 10, 25, 26, 31, 34, 43, 66	*01:01:56, 02:309, 02:454, 03:01:19, 03:103:02, 11:11, 25:05-25:06, 26:09, 26:54, 26:91, 31:03- 31:04, 31:123, 34:01:01:01-34:22, 43:01, 66:02- 66:03:01:02, 66:16, 66:19, 66:21, 66:25-66:26Q, 66:28N, 66:34, 68:130:01, 74:01:03
13	180 bp, 225 bp	1070 bp	1, 2, 3, 10, 25, 26, 34, 43, 66	*01:13, 01:176, 01:194, 02:34-02:35:03, 02:56:01- 02:56:02, 02:62, 02:103, 02:135, 02:580, 02:741, 03:01:01:01-03:01:22, 03:01:24-03:07:02, 03:09- 03:11N, 03:13-03:31, 03:33-03:35, 03:37-03:40, 03:42-03:56, 03:58, 03:60-03:71, 03:73-03:87, 03:90-03:106, 03:109-03:110, 03:112-03:141, 03:143-03:151, 03:153-03:171, 03:174-03:175, 03:177, 03:179-03:193, 03:195-03:197N,

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14^{5,9}	80 bp, 115 bp, 200 bp, 240 bp, 460 bp	1070 bp	3, 26, 29, 31, 34, 36, 68	*02:237, 02:309, 02:454, 02:809, 03:01:38, 03:95, 03:123:02, 03:171, 03:231:01, 03:343, 11:130, 26:19, 26:22, 29:01:01:01-29:132, 31:03-31:04, 31:123, 32:42, 34:04, 36:02, 66:09, 68:19, 68:130:02
15^{5,11,12}	90 bp, 135 bp, 205 bp	1070 bp	1, 30	*01:13, 01:28, 01:176, 01:194, 01:229, 01:299, 03:43, 03:82, 03:186, 11:113, 11:162, 11:282, 30:01:01:01-30:04:02, 30:06-30:20, 30:22-30:153, 31:35, B*07:260
16	240 bp, 380 bp, 410 bp	1070 bp	24, 31, 32	*02:237, 02:809, 03:95, 03:343, 11:306, 29:14, 31:01:02:01-31:153, 32:05, 32:79, 33:53, 33:125, 33:131, 74:13
17	140 bp, 180 bp, 240 bp, 260 bp	1070 bp	1, 3, 25, 32, 74	*01:07, 01:95, 01:289, 01:298, 03:32, 03:43, 03:82, 03:152, 03:186, 03:219, 03:273, 23:64, 24:104, 24:243, 25:03, 25:30, 29:13, 29:39, 29:98, 30:89, 31:21, 31:35, 32:01:01:01-32:126N, 74:07, 74:33, 80:04
18	200 bp, 390 bp	1070 bp	24, 31, 32, 33, 68, 74	*02:243:01-02:243:03, 24:82, 26:177, 29:48, 29:105, 31:08, 31:109, 32:05, 32:15, 32:79, 32:93, 33:01:01:01-33:01:12, 33:03:01:01-33:37, 33:39-33:183, 68:29, 74:04, 74:21
19	340 bp, 375 bp	800 bp	2, 19, 68, 74	*01:121, 02:65, 02:407, 02:449, 03:246, 03:282, 32:62, 68:25, 74:01:01:01-74:35
20^{9,12}	210 bp, 240 bp	800 bp	2, 25, 28, 68	*02:34-02:35:03, 02:46, 02:48, 02:56:01-02:56:02, 02:62, 02:70, 02:78, 02:103, 02:129, 02:571, 02:580, 02:651, 02:741, 25:05, 25:59, 26:54, 26:122, 68:01:01:01-68:210N
21⁵	65 bp, 240 bp, 375 bp, 545 bp	800 bp	2, 23, 24, 26, 28, 32, 66, 68, 69	*02:55, 02:149, 02:243:01-02:243:03, 02:309, 02:644, 02:741, 02:815, 23:57, 24:82, 25:30, 26:22, 26:177, 29:80, 31:41, 32:06, 33:22, 66:06, 66:09, 68:08:02, 68:29, 68:105, 68:157, 69:01:01:01-69:05, 74:35
22^{5,10}	85 bp, 240 bp, 400 bp	800 bp	2, 23, 34 36, 68	*02:34-02:35:03, 02:46, 02:48, 02:56:01-02:56:02, 02:62, 02:70, 02:78, 02:103, 02:129, 02:571, 02:576, 02:580, 02:682, 02:741, 03:187, 11:155, 11:226, 31:62, 34:22, 36:01-36:08, 68:11N, 68:41, B*40:359, B*55:96, B*57:65, C*04:31, C*06:137, C*07:569
23⁵	80 bp, 160 bp, 240 bp, 495 bp	800 bp	2, 3, 24, 26, 28, 36, 68, 80	*02:55, 02:237, 02:671, 02:809, 03:41, 03:63, 03:75, 03:88, 03:95, 03:177, 03:343, 03:347, 11:130, 24:18, 24:204, 24:213, 26:03:01, 26:05-26:06, 26:21, 26:30, 26:78, 26:111, 26:177, 33:24,

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				36:02, 68:05, 68:15, 68:20, 68:109, 68:136, 80:01:01:01-80:01:02, 80:03-80:05, C*06:187
24¹¹	360 bp, 445 bp	1070 bp	10, 26, 31, 66	*02:135, 02:309, 02:454, 03:01:19, 03:103:02, 25:13, 25:46, 26:07:01-26:07:02, 26:30, 26:65, 26:92, 31:04, 31:123, 34:09, 66:02-66:03:01:02, 66:12, 66:16, 66:21, 66:25-66:26Q, 66:28N, 66:34, 74:01:03

¹Alleles are assigned by the presence of specific PCR product(s). However, the sizes of the specific PCR products may be helpful in the interpretation of HLA-A low resolution SSP typings. When the primers in a primer mix can give rise to HLA-specific PCR products of more than one length this is indicated if the size difference is more than 20 base pairs. Size differences of 20 base pairs or less are not given. For high resolution SSP kits, the alleles listed are specified according to amplicon length. Nonspecific amplifications, i.e. a ladder or a smear of bands, may sometimes be seen. GC-rich primers have a higher tendency of giving rise to nonspecific amplifications than other primers. PCR fragments longer than the control bands may sometimes be observed. Such bands should be disregarded and do not influence the interpretation of the SSP typings. PCR fragments migrating faster than the control bands, but slower than a 400 bp fragment may be seen in some gel read-outs. Such bands can be disregarded and do not influence the interpretation of the SSP typings. Some primers may give rise to primer oligomer artifacts. Sometimes this phenomenon is an inherent feature of the primer pair(s) of a primer mix. More often it is due to other factors such as too low amount of DNA in the PCR reactions, taking too long time in setting up the PCR reactions, working at elevated room temperature or using thermal cyclers that are not pre-heated.

²The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 1070 or 800 base pairs respectively, well distribution as outlined in the table. Well number 1 contains the shorter, 800 bp, internal positive control band. The well distribution of the internal controls can help in orientation of the kit on gel photo, as well as allow for kit identification. In the presence of a specific amplification the intensity of the control band often decreases.

³The serological reactivity of all HLA-A alleles is not known. In this table we use the expert-assigned serological grouping in Tissue Antigens (2009) 73:95-170 and the serological grouping of the sequence-defined allele.

⁴For several HLA Class I alleles 1st and/or 4th exon(s) and beyond, as well as intron nucleotide sequences, are not available. In these instances, it is not known whether some of the primers of the SSP sets are completely matched with the target sequences or not. Assumption is made that unknown sequences in these regions are conserved within allelic groups.

⁵HLA-specific PCR products shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR products.

⁶Primer mix 3 may faintly amplify the A*30:04:01-30:04:02, 30:06, 30:09, 30:17, 30:29, 30:46, 30:77, 30:90, 30:99, 30:103, 30:105 and 30:117 alleles.

⁷Primer mix 6 may give rise to a lower yield of A*23 alleles than the other A low primer mixes.

⁸Primer mix 9 may weakly amplify the A*34 alleles.

⁹Primer mixes 6, 10, 14 and 20 have a tendency of giving rise to primer oligomer formation.

¹⁰Primer mix 22 might faintly amplify most A*11 alleles.

¹¹Primer mixes 15 and 24 may give rise to a lower yield of HLA-specific PCR product than the other HLA-A low primer mixes.

¹²Primer mixes 15 and 20 may have tendencies of unspecific amplifications.

Abbreviations

w: might be weakly amplified.

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SPECIFICITY TABLE

HLA-B low resolution primer set

Specificities and sizes of the PCR products of the 48 primer mixes used for
HLA-B low resolution SSP typing

Primer Mix	Size of spec. PCR product ¹	Size of control band ²	HLA-B serol. ³	Amplified HLA-B alleles ⁴
25^{5,9}	110 bp	800 bp	7, 703, 35, 40, 41, 42, 48, 61	*07:02:01:01-07:18:02, 07:20-07:32, 07:34-07:39, 07:41-07:47, 07:49N-07:52, 07:54-07:59, 07:61-07:99, 07:101-07:121, 07:123-07:138, 07:140-07:163, 07:166-07:208, 07:210-07:222, 07:224-07:225, 07:227-07:234, 07:236-07:300, 07:302-07:342, 07:344-07:345, 07:347-07:358, 08:79, 08:156, 08:187, 15:138, 15:230, 15:241, 15:297, 35:66, 37:07, 40:15-40:16, 40:23, 40:32, 40:98, 40:128, 40:136, 40:158, 40:183, 40:198, 40:231, 40:279, 40:355, 41:08, 42:05:01-42:05:02, 44:150, 48:05, 48:08, 48:15, C*02:23, C*03:260, C*04:77
26	215 bp	1070 bp	8, 44	*08:01:01:01-08:05, 08:07-08:25, 08:27-08:49, 08:51-08:61, 08:63-08:64, 08:66-08:84, 08:86N-08:93, 08:95-08:122, 08:124-08:131, 08:133-08:225, 08:227, 13:93, 15:142, 15:180, 15:429, 35:218, 35:256, 37:62, 40:328, 44:49, 44:156, 49:25, 51:68, 51:176, 52:77, C*06:147
27⁹	140 bp, 235 bp	1070 bp	7, 8, 13, 15, 35, 4005, 44, 49, 50, 61, 62, 77	*07:20, 07:24, 07:60, 07:100, 07:131, 07:220, 07:223, 07:358, 08:21, 08:25, 08:175, 13:01:01:01-13:04, 13:06-13:08, 13:10-13:23, 13:25-13:38, 13:40-13:57, 13:59-13:66, 13:68-13:96, 13:99-13:131, 15:07:01:01-15:07:03, 15:36 ^w , 15:45, 15:55, 15:68, 15:89 ^w , 15:126, 15:197:02, 15:207, 15:324, 15:329, 15:331, 15:360, 15:383, 15:405, 15:431, 15:450, 35:05:01:01-35:05:03, 35:16-35:17:03, 35:22:01:01-35:22:01:02, 35:30, 35:51, 35:58, 35:72, 35:89, 35:97, 35:113-35:114, 35:125, 35:164, 35:199, 35:232, 35:242, 35:318, 35:346, 35:368, 35:389, 35:416, 35:427N, 40:05:01:01-40:05:01:02, 40:71, 40:174, 44:08 ^w , 44:54, 44:57 ^w , 44:60, 44:106, 44:110, 44:135, 44:158, 44:184, 44:211, 44:213, 46:12, 51:64, 51:148, 53:14, 55:51, 58:18, C*03:05, C*03:25, C*03:27, C*03:143, C*03:167, C*03:296:01-03:296:02, C*03:335, C*03:346, C*03:407
28^{5,6,7}	105 bp, 140 bp, 265 bp	800 bp	12, 13, 14, 15, 17, 18, 21, 27, 35, 39, 40, 41, 44, 45, 47, 48, 49, 50, 57, 58, 60, 61, 62, 64, 65	*07:68:01-07:68:03, 07:100, 07:218, 07:220, 07:237, 07:262, 08:71, 08:118, 13:01:01:01-13:01:09, 13:01:11-13:04, 13:06-13:13:02, 13:15-13:23, 13:25-13:57, 13:59-13:82, 13:84-13:92, 13:94-13:96, 13:99-13:101, 13:102 ^w , 13:103N-13:105, 13:107-13:131, 14:01:01:01-14:02:08, 14:02:10-14:05, 14:07N, 14:09, 14:11-14:19, 14:21-14:36, 14:38-14:54, 14:57-14:68, 15:07:01:01-15:07:03, 15:45-15:46, 15:53, 15:55, 15:68, 15:106, 15:126, 15:197:02, 15:207, 15:212, 15:324, 15:329, 15:331, 15:336, 15:347, 15:360, 15:383, 15:399, 15:405, 15:431, 15:450, 15:510, 18:14, 18:44:01-18:44:02, 18:107, 27:32, 27:106, 27:138, 27:180, 35:05:01:01-35:05:03, 35:22:01:01-35:22:01:02, 35:46-35:47, 35:51, 35:58, 35:63, 35:66, 35:72, 35:89, 35:97, 35:137, 35:147, 35:154, 35:182, 35:199, 35:207, 35:217, 35:232, 35:278, 35:317, 35:368, 35:389, 35:416, 35:427N, 38:19, 39:03:01:01-39:03:01:02, 39:14:01:01-39:14:01:02, 39:24:01-39:24:02, 39:29, 39:37, 39:76, 39:79, 39:120, 39:144, 40:01:01-40:01:39,

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29 ⁷	185 bp, 235 bp	800 bp	7, 16, 17, 27, 2708, 37, 38, 39, 3901, 3902, 64, 67	*07:02:32, 07:85:02, 07:197, 14:01:01:01-14:01:05, 14:01:07-14:01:09, 14:07N-14:08:02, 14:10, 14:12, 14:14, 14:19, 14:26, 14:32, 14:40, 14:46-14:47, 14:49, 14:53-14:55, 14:65, 18:165, 27:01-27:05:15, 27:05:17-27:05:19, 27:05:21-27:05:37, 27:06:01:01-27:06:01:02, 27:07:04, 27:08-27:10, 27:12:01:01-27:13, 27:16-27:18, 27:20, 27:23, 27:26-27:27, 27:29, 27:31, 27:35-27:37, 27:39-27:42, 27:44-27:46, 27:48-27:61, 27:64N-27:69, 27:72-27:75, 27:77-27:80, 27:82-27:124, 27:126, 27:128-27:129, 27:131-27:137, 27:140-27:149, 27:151-27:152, 27:154-27:163, 27:165-27:179, 27:181-27:186, 27:188-27:197, 37:02, 38:01:01:01-38:01:07, 38:01:09-38:02:02, 38:02:04-38:03, 38:07-38:24, 38:26-38:32, 38:34N-38:83N, 39:01:01:01-39:01:01:09, 39:01:03:01-39:01:08, 39:01:10-39:01:25, 39:02:01, 39:03:01:01-39:03:01:02, 39:05:01:01-39:06:02:04, 39:06:04-39:09:03, 39:11, 39:14:01:01-39:15, 39:18, 39:19:02, 39:22, 39:24:01-39:39:01, 39:40:01N-39:44, 39:46-39:48, 39:50-39:62, 39:64-39:71, 39:73-39:75, 39:77, 39:79-39:82, 39:84-39:88, 39:90-39:91, 39:93-39:95N, 39:97N-39:98, 39:100, 39:102-39:104, 39:106-39:109, 39:111-39:125, 39:127-39:128, 39:130, 39:132, 39:134-39:142N, 39:144,

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72	285 bp	800 bp	7, 703, 8, 35, 40, 41, 42, 48, 53, 60, 61, 81	*07:02:01:01-07:02:38, 07:02:40-07:06:03, 07:08:01-07:18:02, 07:20-07:32, 07:34-07:39, 07:41-07:52, 07:54-07:59, 07:61-07:76, 07:79-07:83, 07:85:01-07:99, 07:101-07:121, 07:123-07:138, 07:140-07:164, 07:166-07:192, 07:194-07:195, 07:199-07:213, 07:215-07:234, 07:236-07:238, 07:240-07:254, 07:256-07:342, 07:344-07:358, 08:01:01:01-08:01:20, 08:01:22-08:01:24, 08:01:26-08:05, 08:07-08:08N, 08:10-08:11, 08:13-08:15, 08:17-08:30N, 08:32-08:83, 08:85-08:88, 08:90-08:102, 08:104-08:106, 08:108-08:112, 08:114-08:115, 08:117-08:133, 08:135-08:168, 08:170-08:174, 08:176-08:183, 08:185-08:227, 15:297, 27:164, 35:66, 35:87, 37:07, 40:15-40:16, 40:30-40:32, 40:34, 40:45, 40:59, 40:80, 40:98, 40:137, 40:160:01-40:160:02, 41:02:01:01-41:02:08, 41:04, 41:10-41:11, 41:13, 41:18-41:19, 41:23-41:24, 41:27, 41:31, 41:36, 41:38-41:43, 41:45N-41:49, 41:51-41:52, 41:55, 41:58, 42:01:01-42:02:01:02, 42:05:01-42:07, 42:09-42:13, 42:15-42:26, 44:150, 44:166, 44:342, 48:01:01:01-48:01:07, 48:05-48:12, 48:14-48:20, 48:22, 48:27-48:39, 48:41-48:50, 53:15, 81:01:01-81:08, C*03:260

¹Alleles are assigned by the presence of specific PCR product(s). However, the sizes of the specific PCR products may be helpful in the interpretation of HLA-B low resolution SSP typings.

When the primers in a primer mix can give rise to HLA-specific PCR products of more than one length this is indicated if the size difference is more than 20 base pairs. Size differences of 20 base pairs or less are not given. For high resolution SSP kits, the alleles listed are specified according to amplicon length.

Nonspecific amplifications, i.e. a ladder or a smear of bands, may sometimes be seen. GC-rich primers have a higher tendency of giving rise to nonspecific amplifications than other primers.

PCR fragments longer than the control bands may sometimes be observed. Such bands should be disregarded and do not influence the interpretation of the SSP typings.

PCR fragments migrating faster than the control bands, but slower than a 400 bp fragment may be seen in some gel read-outs. Such bands can be disregarded and do not influence the interpretation of the SSP typings.

Some primers may give rise to primer oligomer artifacts. Sometimes this phenomenon is an inherent feature of the primer pair(s) of a primer mix. More often it is due to other factors such as too low amount of DNA in the PCR reactions, taking too long time in setting up the PCR reactions, working at elevated room temperature or using thermal cyclers that are not pre-heated.

²The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 1070 or 800 base pairs respectively, well distribution as outlined in the table. Well number 25 contains the shorter, 800 bp, internal positive control band. The well distribution of the internal controls

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can help in orientation of the kit on gel photo, as well as allow for kit identification. In the presence of a specific amplification the intensity of the control band often decreases.

³The serological reactivity of all HLA-B alleles is not known. In this table we use the expert-assigned serological grouping in Tissue Antigens (2009) 73:95-170 and the serological grouping of the sequence-defined allele.

⁴For several HLA Class I alleles 1st and/or 4th exon(s) and beyond, as well as intron nucleotide sequences, are not available. In these instances it is not known whether some of the primers of the SSP sets are completely matched with the target sequences or not. Assumption is made that unknown sequences in these regions are conserved within allelic groups.

⁵HLA-specific PCR products shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR products.

⁶Primer mix 28 may give rise to a lower yield of HLA-specific PCR product than the other HLA-B low resolution primer mixes in B*40, B*41, B*45, B*49 and B*50 alleles.

⁷Primer mixes 28, 29, 33, 38 and 63 may give rise to a lower yield of HLA-specific PCR product than the other HLA-B low resolution primer mixes.

⁸Primer mixes 33, 52 and 62 may have tendencies of unspecific amplifications, most pronounced in primer mix 33.

⁹Primer mixes 25, 27, 38, 41, 42, 43, 44, 58, 67 and 69 have a tendency to giving rise to primer oligomer formation.

¹⁰The B*57 and B*58 alleles might be faintly amplified by primer mix 33.

¹¹The C*17:01 to C*17:04 alleles might be faintly amplified by primer mix 49.

¹²Primer mix 67 may generate a false positive band of about 800 base pairs. This band should be disregarded when interpreting HLA-B low resolution typings.

¹³Primer mix 63 may give rise to a lower yield of B*54 alleles than the other B low primer mixes.

¹⁴Primer mix 63 may amplify B*44:05 samples.

¹⁵The Bw4-associated HLA-A specificities A9, A23, A24, A2403, A25 and A32 are not amplified by the primer pair in primer mix 70.

Abbreviations

w: might be weakly amplified.

?: nucleotide sequence information not available for the primer matching sequence.

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SPECIFICITY TABLE

HLA-C low resolution SSP typing

Specificities and sizes of the PCR products of the 23+1 primer mixes used for
HLA-C low resolution SSP typing

Primer Mix	Size of spec. PCR product ¹	Size of control band ²	Amplified HLA class I alleles ³
73⁴	90 bp, 150 bp	800 bp	*01:02:01:01-01:155, 01:157-01:167, 01:170-01:176, 03:416, 04:71, 05:200, 07:316, 07:338, 07:579, 12:215, 14:58, 15:104, B*39:76, B*54:18
74⁵	130 bp, 200 bp, 270 bp, 300 bp	800 bp	*01:10, 01:43, 02:02:01-02:02:03, 02:02:06-02:40:02, 02:42-02:57, 02:59-02:169N, 04:32, 04:77, 04:265, 04:357, 05:105, 05:200, 05:206, 06:08, 07:101, 07:148, 07:161, 07:583, 08:31, 08:185, 12:119, 12:198, 14:25, 15:42, 15:111, 16:29, 16:50, 17:01:01-02:17:06, 17:08-17:16:02, 17:18-17:22, 17:24-17:32, 17:34-17:46, 18:03
75¹²	280 bp	800 bp	*01:169:02, 02:02:01-02:02:03, 02:02:06-02:02:29, 02:02:31-02:02:39, 02:02:41-02:03, 02:04 ^w , 02:05:01-02:13, 02:14:01 ^w , 02:15-02:25Q, 02:26:02-02:40:02, 02:42-02:86, 02:88-02:106, 02:108-02:133, 02:135N-02:151, 02:153-02:163, 02:165N-02:166, 02:168-02:169N, 03:02:01-03:02:09, 03:02:11-03:02:22, 03:04:01-01-03:04:25, 03:04:27-03:10, 03:14-03:17:02, 03:19, 03:23-03:29, 03:32-03:38:02, 03:40:01-03:42, 03:44-03:48, 03:51, 03:54, 03:57:01-03:57:02, 03:60, 03:63-03:64:01, 03:65, 03:70-03:74, 03:77-03:78, 03:80:01-03:80:02, 03:82, 03:84, 03:87:01-03:87:02, 03:89-03:95, 03:98, 03:100-03:101, 03:104-03:111, 03:113:01-03:115:02, 03:117-03:118, 03:121N, 03:123, 03:125, 03:128-03:131, 03:134-03:136, 03:138-03:140, 03:143, 03:145-03:149, 03:153-03:155, 03:157, 03:159, 03:162-03:164, 03:169Q, 03:172-03:174, 03:178-03:181, 03:183-03:184:02, 03:186:01-03:186:02, 03:190-03:191, 03:193-03:194, 03:197-03:201N, 03:208N-03:213, 03:215-03:216, 03:218-03:219, 03:221-03:222, 03:224N-03:226, 03:232-03:236, 03:238-03:240, 03:244Q-03:250, 03:252, 03:255-03:261, 03:263:01-03:263:03, 03:265N-03:266, 03:269-03:270, 03:277N, 03:278 ^w , 03:279-03:283, 03:286-03:287:02, 03:292-03:294, 03:296:01-03:303, 03:305-03:306, 03:309-03:311, 03:313-03:315, 03:317-03:318N, 03:322-03:323N, 03:326, 03:328-03:335, 03:337-03:338, 03:340, 03:342-03:343, 03:347-03:350, 03:353-03:355, 03:358-03:359, 03:361-03:362, 03:365-03:366N, 03:368-03:369, 03:371, 03:373, 03:376, 03:379, 03:381-03:382, 03:384-03:388, 03:390-03:394, 03:396N-03:397, 03:399-03:412, 03:415, 03:417, 03:419-03:420, 03:423-03:426, 03:429, 03:431, 03:434-03:435, 03:437, 03:439, 03:441-03:443, 03:445N-03:446N, 03:448Q-03:449N, 03:452-03:453, 03:455-03:456, 03:458, 03:462N-03:466, 04:03:01-01-04:03:05, 04:06:01-04:06:02, 04:16, 04:80, 04:107, 04:147, 04:160, 04:171, 04:256, 04:286, 04:294, 04:299, 04:335, 04:337, 04:351:01-04:351:02, 04:357, 04:363, 05:58:01, 05:58:03, 06:03:01, 06:132:01-06:132:02, 07:96:01-07:96:02, 07:314:02, 07:578, 07:756, 12:02:17, 12:03:23, 12:140:02, 15:02:01-01-15:02:20, 15:02:22-15:02:24, 15:02:26-15:05:08, 15:05:10-15:05:14, 15:06:01-15:09, 15:10:02-15:10:03, 15:11, 15:13:01-01-15:13:01:02, 15:15-15:19, 15:21-15:22, 15:24-15:35, 15:37-15:60,

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76^{4,6}	85 bp, 170 bp, 275 bp	1070 bp	*01:67, 01:122, 01:131, 03:02:01-03:02:12, 03:02:14-03:02:19, 03:02:21-03:03:51, 03:03:53-03:04:06, 03:04:08-03:11:02, 03:13:01:01-03:15, 03:17:01-03:40:04, 03:42-03:57:02, 03:59-03:79, 03:80:02-03:85, 03:87:01-03:93, 03:95-03:98, 03:100-03:109, 03:111-03:112, 03:114-03:150, 03:152-03:164, 03:166-03:250, 03:252-03:259, 03:261-03:266, 03:268-03:285, 03:287:01-03:292, 03:294-03:331, 03:333-03:383, 03:385-03:434, 03:436-03:450, 03:452-03:466, 04:201:02, 04:212, 07:242, B*44:274
77	280 bp	800 bp	*03:03:01:01-03:03:20, 03:03:22-03:03:50, 03:03:52-03:03:54, 03:11:01-03:11:02, 03:13:01:01-03:13:02, 03:18:02-03:18:03, 03:20N-03:22Q, 03:30-03:31, 03:43:01-03:43:02, 03:49-03:50, 03:52-03:53, 03:55-03:56, 03:58-03:59, 03:61-03:62, 03:66, 03:67 ^w , 03:68-03:69, 03:75-03:76, 03:79, 03:81, 03:83, 03:85-03:86, 03:88, 03:96-03:97, 03:102-03:103, 03:112, 03:116:01-03:116:02, 03:119:01-03:120, 03:122, 03:124, 03:126-03:127, 03:132-03:133, 03:141-03:142, 03:150-03:152, 03:158, 03:160-03:161, 03:165:01-03:165:02, 03:167-03:168, 03:171, 03:175-03:177, 03:185, 03:187-03:189N, 03:192, 03:196, 03:202-03:207, 03:214, 03:217, 03:220, 03:223, 03:227-03:230, 03:237, 03:241-03:243, 03:251, 03:253-03:254, 03:262, 03:267-03:268, 03:271-03:276, 03:284-03:285, 03:288-03:291, 03:295 ^w , 03:304, 03:307-03:308, 03:312, 03:316N, 03:319-03:321, 03:324-03:325, 03:327, 03:336, 03:339, 03:341, 03:345-03:346, 03:351-03:352, 03:356-03:357, 03:360, 03:363N-03:364, 03:367, 03:370, 03:372, 03:374-03:375, 03:377N-03:378, 03:380N, 03:383, 03:389, 03:395, 03:398, 03:413-03:414, 03:416, 03:418, 03:421N-03:422, 03:427-03:428, 03:430, 03:432N-03:433, 03:436, 03:438, 03:440, 03:444N, 03:447N, 03:450-03:451, 03:457, 03:460-03:461, 15:12, 15:144
78¹²	135 bp, 330 bp	800 bp	*02:02:01-02:02:03, 02:02:06-02:02:12, 02:02:14-02:02:25, 02:02:27-02:02:28, 02:02:30-02:20, 02:22-02:25Q, 02:27:01-02:38:02N, 02:40:01-02:40:02, 02:42-02:44, 02:46-02:86, 02:88-02:100, 02:101 ^w , 02:102-02:106, 02:108-02:133, 02:135N-02:151, 02:153-02:166, 02:168-02:169N, 03:231, 04:01:01:01-04:01:01:29, 04:01:01:31-04:01:27, 04:01:29-04:01:60, 04:01:62, 04:01:64, 04:01:66-04:01:113, 04:03:01:01-04:07:01, 04:08-04:15:03, 04:17-04:20, 04:23-04:41, 04:43-04:102, 04:104-04:139, 04:141-04:195, 04:197-04:212, 04:214-04:219, 04:221-04:235, 04:237-04:303, 04:305N-04:310, 04:312-04:350N, 04:352-04:375, 05:26, 05:78:01-05:78:02, 07:01:74, 07:02:09, 07:125, 07:356, 07:531, 07:583, 07:723, 08:163, 08:183, 12:269, 15:11, 15:36, 15:118, 16:34, 16:121, 16:150
79	170 bp, 390 bp, 445 bp	1070 bp	*02:94, 04:129, 05:01:01:01-05:01:45, 05:03-05:215, 06:05, 06:67, 08:10, 12:21, 12:33, 15:107, 15:178, 16:40, 16:53, 16:110, 16:113, 17:05
80^{4,12}	125 bp, 355 bp	800 bp	*01:90, 01:101-01:102, 01:113, 01:136, 01:145N, 02:06:01-02:06:02, 02:23, 02:36:01-02:36:02, 02:47, 04:108 ^w , 04:178, 05:132, 05:215, 06:02:01:01-06:02:01:17, 06:02:03-06:02:38, 06:02:40-06:16N, 06:18-06:31, 06:33-06:76:01, 06:77-06:93, 06:96-06:98, 06:100-06:132:01, 06:133-06:179, 06:181-06:235, 06:237-06:243, 06:245-06:263N, 08:113, 12:02:11, 12:03:09, 12:03:26, 12:15, 12:113, 12:208, 15:02:01:01-15:03, 15:05:01:01 ^w -15:05:15 ^w , 15:06:01-15:13:01:02, 15:15-15:19,

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81⁷	245 bp, 425 bp	800 bp	*07:01:01:01-07:33N, 07:35-07:294, 07:296-07:779, 12:181
82^{4,8,12}	110 bp, 165 bp, 390 bp	800 bp	*01:43, 02:87, 03:280, 07:101, 07:148, 07:161, 07:583, 08:01:01:01-08:63, 08:65-08:188, 12:127, 12:203, 16:139
83	155 bp, 255 bp, 340 bp	1070 bp	*01:14, 01:59, 01:118, 02:02:01-02:02:03, 02:02:06-02:40:02, 02:42-02:86, 02:88-02:169N, 03:07:01:01-03:07:02, 03:15, 03:45, 03:130, 03:140, 03:163, 03:231, 03:243, 03:248, 03:268, 03:297, 03:308, 03:461, 04:01:01:01-04:01:01:29, 04:01:01:31-04:01:113, 04:03:01:01-04:20, 04:23-04:375, 05:01:01:01-05:01:45, 05:03-05:128N, 05:130-05:215, 06:02:01:01-06:02:01:17, 06:02:03-06:02:11, 06:02:13-06:02:64, 06:02:66-06:10, 06:12-06:51, 06:53:01-06:121, 06:123, 06:125-06:146, 06:148-06:216, 06:218-06:247, 06:249-06:251, 06:253-06:263N, 07:07, 07:09, 07:49, 07:53, 07:76:01-07:76:02, 07:125, 07:210, 07:216, 07:238, 07:247, 07:315, 07:328, 07:356, 07:403, 07:406, 07:531, 07:598, 08:10, 12:04:01-12:05, 12:09, 12:21, 12:33, 12:41, 12:54, 12:60, 12:146, 12:188, 12:194, 14:04, 14:12, 14:49, 14:64, 14:77, 14:90, 14:108, 15:02:01:01-15:05:10, 15:05:13-15:06:03, 15:08:01-15:13:01:02, 15:15-15:19, 15:22-15:24, 15:26-15:42, 15:44:01-15:70, 15:72-15:115N, 15:117-15:143, 15:145N-15:194, 16:01:01:01-16:02:17, 16:06-16:09, 16:11-16:28, 16:30N-16:32, 16:34, 16:36-16:39:02, 16:41, 16:43-16:44, 16:46-16:52, 16:54, 16:56-16:60, 16:62-16:65, 16:69-16:77N, 16:79-16:81, 16:83-16:108, 16:111-16:123N, 16:125-16:148, 16:151-16:152, 17:01:01:02-17:21, 17:23-17:46, 18:01:01-18:12, A*24:174
84^{4,10}	100 bp, 155 bp, 220 bp	800 bp	*01:02:18, 01:04, 01:21, 02:02:44, 06:02:38, 06:76:02, 12:02:01-12:02:13, 12:02:16-12:02:18, 12:02:20-12:03:01:13, 12:03:03-12:03:07, 12:03:09-12:03:15, 12:03:17-12:03:19, 12:03:21-12:03:29, 12:03:31-12:03:33, 12:03:35-12:03:56, 12:04:02-12:08, 12:10:01-12:13:01:02, 12:14:02-12:18:01, 12:19-12:25, 12:27-12:32, 12:34-12:58, 12:60-12:143, 12:145-12:180, 12:182-12:184, 12:186-12:195:02, 12:196-12:207, 12:209-12:221, 12:223, 12:225-12:232N, 12:234-12:282, 14:02:08, 14:02:21, 16:01:17, 16:02:13, 16:15:02, B*57:01:24
85^{4,10}	120 bp, 250 bp	800 bp	*01:21, 02:12, 02:49, 02:55:01-02:55:02, 02:115, 04:01:01:01-04:01:01:29, 04:01:01:31-04:01:113, 04:03:01:01-04:07:01, 04:08-04:09N, 04:12-04:20, 04:23-04:35, 04:37-04:54:02, 04:56-04:152, 04:154-04:168, 04:170N-04:191N, 04:193, 04:195-04:209, 04:211-04:213, 04:216-04:226, 04:228-04:248, 04:250-04:277, 04:279N ^w , 04:280-04:298, 04:300N-04:346, 04:348-04:375, 05:42, 05:46, 05:112, 06:76:02, 07:01:74, 07:02:09, 07:125, 07:356, 07:531, 07:583, 07:723, 08:05, 08:21, 08:25, 08:137, 12:02:01-12:02:10, 12:02:12-12:02:27, 12:02:28 ^w , 12:03:01:01-12:03:03, 12:03:05-12:03:08, 12:03:10-12:03:12,

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86¹³	160 bp, 210 bp	800 bp	*01:04, 01:09, 01:160, 02:05:01-02:05:03, 02:17, 04:42:01-04:42:02, 04:220, 04:360, 06:02:01:01-06:02:01:17, 06:02:03-06:02:15, 06:02:17-06:02:42, 06:02:44-06:03:02, 06:07-06:13, 06:15-06:34:02, 06:36-06:39, 06:41-06:71, 06:73-06:78, 06:80, 06:82-06:100, 06:102:01-06:122, 06:124-06:126, 06:128N-06:135, 06:137-06:142, 06:145-06:152N, 06:154-06:196, 06:198-06:202, 06:205-06:263N, 07:31:01-07:31:02, 07:125, 07:177, 07:356, 07:514, 07:531, 12:03:01:01-12:03:46, 12:03:48-12:07, 12:11-12:13:01:02, 12:15, 12:19, 12:23, 12:25-12:26, 12:28-12:29, 12:31-12:35, 12:37-12:39N, 12:42Q-12:43, 12:45-12:48, 12:50-12:55, 12:57:01-12:63, 12:65-12:66, 12:70-12:71, 12:75-12:79, 12:81-12:82, 12:87-12:95, 12:97-12:102, 12:107-12:111, 12:113, 12:115-12:116, 12:119-12:122, 12:125, 12:129, 12:131, 12:133, 12:135, 12:138-12:141, 12:143-12:144, 12:147, 12:149-12:150, 12:152, 12:154, 12:156-12:160, 12:163, 12:165, 12:167, 12:170-12:174, 12:176, 12:178, 12:180, 12:182, 12:184-12:187, 12:189-12:192, 12:194-12:195:03, 12:197, 12:199, 12:201-12:203, 12:205-12:206, 12:209-12:211, 12:213, 12:215-12:216, 12:218, 12:220, 12:223, 12:225, 12:227, 12:229-12:230, 12:232N, 12:235, 12:237-12:238, 12:242, 12:244-12:246, 12:248-12:249, 12:253-12:254, 12:256-12:257, 12:259-12:260, 12:262, 12:264-12:267, 12:269, 12:271-12:274N, 12:276-12:278, 12:282, 14:15-14:16, 14:87, 16:04:01:01-16:04:01:02, 16:04:03-16:04:05, 16:29, 16:33, 16:35, 16:42, 16:48, 16:55, 16:61, 16:66, 16:78, 16:82, 16:91, 16:109, 16:124, 16:149-16:150, B*15:510
87¹²	130 bp, 255 bp, 555 bp	1070 bp	*01:168-01:169:02, 02:02:01-02:02:03, 02:02:06-02:13, 02:15-02:26:03, 02:28-02:40:02, 02:42-02:64, 02:66-02:86, 02:88-02:106, 02:108-02:114, 02:116-02:130, 02:132-02:163, 02:165N-02:169N, 03:07:01:01-03:07:02, 03:10, 03:15, 03:29, 03:45, 03:58, 03:86, 03:94, 03:163, 03:209, 03:268, 03:297, 03:302, 03:450, 03:461, 04:03:01:01-04:03:05, 04:06:01-04:06:02, 04:16, 04:37, 04:80, 04:103, 04:107, 04:147, 04:160, 04:171, 04:190, 04:256, 04:286, 04:294, 04:299, 04:335, 04:337, 04:351:01-04:351:02, 04:357, 04:363, 05:01:01:01-05:01:45, 05:03-05:19, 05:21-05:42, 05:44:01-05:77, 05:79-05:112, 05:114-05:155, 05:157-05:199, 05:201, 05:203-05:215, 06:03:01-06:03:02, 06:76:01-06:76:02, 06:132:01-06:132:02, 08:10, 12:04:01-12:05, 12:09, 12:21, 12:33, 12:41, 12:60, 12:72, 12:135, 12:146, 12:154, 12:178, 14:45, 15:02:01:01-15:06:03, 15:08:01-15:13:01:02, 15:15-15:19, 15:21-15:22, 15:24, 15:26-15:35, 15:37-15:42, 15:44:01-15:62, 15:64-15:84Q, 15:86-15:137, 15:139-15:143, 15:145N-15:157, 15:159-15:161, 15:163-15:180, 15:182-15:194, 16:02:01-16:02:17, 16:09, 16:12, 16:18-16:19, 16:25, 16:37, 16:46-16:48, 16:60, 16:63, 16:69-16:70, 16:74, 16:77N, 16:84, 16:88-16:91, 16:99, 16:101-16:104, 16:107-16:108, 16:115, 16:120-16:121, 16:123N, 16:132N-16:133, 16:136, 16:140,

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88¹¹	160 bp, 260 bp, 445 bp	1070 bp	16:143-16:145, 17:01:01:02-17:19, 17:21, 17:23-17:46, 18:09, B*15:277, B*15:430, B*35:222, B*42:22, B*54:38 *01:67, 01:122, 01:125, 01:177, 03:155, 03:231, 03:351, 04:11, 04:29, 04:36, 04:55, 04:114, 04:172, 07:64, 07:293, 07:402, 07:519, 08:74, 08:95, 08:163, 08:183, 12:55, 12:269, 14:02:01:01-14:11, 14:13-14:48, 14:50-14:107, 14:109, 16:40, 16:53, 16:110, 16:113, 16:150, A*29:86, A*30:62, A*33:63, B*18:64, B*35:183, B*35:252, B*39:114, B*39:140, B*40:138, B*41:59
89^{4,9}	110 bp, 325 bp	800 bp	*01:90, 01:101-01:102, 01:113, 01:116, 02:06:01-02:06:02, 02:23, 02:36:01-02:36:02, 02:68, 03:81, 03:175, 03:199, 03:245, 03:317, 03:388, 04:108, 04:112, 04:169, 04:178, 05:36, 05:132, 05:215, 06:89, 06:224, 07:01:74, 07:123, 07:173, 07:294, 07:626, 07:725, 07:775, 08:113, 12:08, 12:15, 12:81, 12:113, 12:188, 12:208, 12:282, 14:92, 15:02:01:01-15:13:01:02, 15:15-15:19, 15:21-15:24, 15:26-15:194, 16:20, 16:64, 16:70, 16:87, 16:109
90¹¹	180 bp, 210 bp, 240 bp	1070 bp	*01:160, 02:13, 02:18, 02:33, 02:49, 02:75, 02:115, 04:01:01:01- 04:01:01:29, 04:01:01:31-04:01:22, 04:01:24-04:01:73, 04:01:74 ^w , 04:01:75-04:01:113, 04:03:01:01-04:07:01, 04:08- 04:10, 04:12-04:20, 04:23-04:32, 04:34-04:106, 04:108-04:115N, 04:117-04:129, 04:131-04:166:01, 04:167-04:168, 04:170N- 04:171, 04:173N-04:230, 04:232-04:282, 04:284-04:375, 05:17, 05:25, 05:42, 05:55, 05:68, 05:76, 05:79, 05:115, 05:134, 05:143, 06:05, 06:31, 06:76:02, 06:118, 07:01:74, 07:02:09, 07:31:01- 07:31:02, 07:154, 07:177, 07:514, 07:583, 08:01:01:01-08:01:17, 08:01:19-08:01:28, 08:03:01-08:03:04, 08:06, 08:08:01-08:11, 08:14, 08:16:01-08:16:02, 08:20-08:22, 08:24, 08:26N, 08:28, 08:36N, 08:38, 08:40-08:42, 08:44, 08:46-08:47, 08:50, 08:56- 08:61, 08:65, 08:72:01-08:72:02, 08:78-08:89N, 08:91, 08:95- 08:99, 08:101-08:102, 08:105-08:106, 08:109, 08:117-08:119, 08:121N-08:122, 08:124, 08:127N-08:131, 08:133, 08:135- 08:137, 08:141Q, 08:143-08:145, 08:147-08:149, 08:153-08:155, 08:157, 08:162-08:164, 08:168, 08:173N-08:176, 08:178, 08:186- 08:188, 12:14:01-12:14:02, 12:28, 12:58, 12:132, 12:135, 12:146, 12:169, 12:176, 12:181, 12:252, 14:10, 14:15, 14:17, 14:87, 15:12, 15:25, 15:31, 15:62, 15:65, 15:75, 15:144, 15:169, 16:01:01:01-16:02:17, 16:04:01:01-16:04:01:02, 16:04:03- 16:04:05, 16:06-16:39:02, 16:41-16:42, 16:44-16:52, 16:54- 16:109, 16:111-16:112, 16:114-16:139, 16:141-16:152
91¹⁰	225 bp, 250 bp, 290 bp	800 bp	*01:60, 02:40:01-02:40:02, 04:58, 04:160, 04:368, 05:23, 05:62, 05:134, 05:143, 05:146, 05:151, 05:163, 05:206, 06:118, 08:07, 08:47, 08:104, 08:142, 08:185, 08:188, 12:14:01-12:14:02, 12:92, 12:176, 14:17, 15:25, 15:65, 17:01:01:02-17:46
92	215 bp, 420 bp	800 bp	*01:02:01:01-01:20, 01:22-01:177, 03:58, 03:86, 03:94, 04:37, 04:230, 04:263, 05:16, 05:85, 05:107, 06:05-06:06, 06:17, 06:31, 06:204, 07:07, 07:09, 07:39-07:40, 07:49, 07:76:01-07:76:02, 07:177, 07:210, 07:238, 07:247, 07:315, 07:328, 07:335, 07:403, 07:406, 07:563, 07:598, 08:12, 12:09, 12:24, 12:176, 14:02:01:01-14:02:31, 14:03:01-14:05, 14:07N, 14:10-14:14, 14:17-14:27, 14:29-14:52, 14:55-14:62, 14:64-14:76, 14:78- 14:86, 14:88-14:89, 14:91, 14:93N-14:104, 14:106-14:109, 15:102, 16:04:01:01-16:04:01:02, 16:04:03-16:04:05, 16:29, 16:33, 16:42, 16:53, 16:55, 16:61, 16:66, 16:68, 16:78, 16:82, 16:88, 16:91, 16:109, 16:124, 16:149-16:150, 18:01:01-18:12, B*07:239, B*14:03

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93	325 bp, 380 bp	1070 bp	*01:03, 01:24, 01:34, 01:49:01-01:50, 01:55, 01:78, 01:131, 01:176, 02:22, 02:62, 02:118, 03:03:01-01-03:04:74, 03:06:01-03:11:02, 03:14, 03:18:01-03:24, 03:26:01-03:26:02, 03:28-03:32, 03:34, 03:37:01-03:59, 03:61-03:70, 03:72-03:83, 03:85, 03:87:01-03:88, 03:90-03:93, 03:96, 03:98, 03:100-03:107, 03:109, 03:111-03:120, 03:122-03:131, 03:133-03:134, 03:136-03:138, 03:140-03:145, 03:147-03:153, 03:155-03:166, 03:168, 03:170-03:176, 03:179-03:189N, 03:191-03:193, 03:195-03:196, 03:202-03:215, 03:217-03:220, 03:223, 03:227-03:237, 03:239-03:244Q, 03:246-03:247, 03:250-03:257, 03:259-03:261, 03:262 [?] , 03:263:01-03:263:03, 03:265N-03:270, 03:272-03:291, 03:293-03:295, 03:297, 03:303-03:314, 03:316N-03:325, 03:327-03:328, 03:331, 03:333-03:334, 03:336-03:337, 03:339-03:348, 03:351-03:364, 03:366N-03:370, 03:372, 03:374-03:385, 03:387-03:390, 03:392N-03:401, 03:404-03:405, 03:408-03:410, 03:413-03:424N, 03:426-03:428, 03:430, 03:432N-03:448Q, 03:450-03:451, 03:453-03:463N, 03:465-03:466, 04:01:01-01-04:01:01:29, 04:01:01:31-04:01:15, 04:01:17-04:01:113, 04:03:01:01-04:20, 04:24-04:53, 04:55-04:71, 04:73-04:107, 04:109-04:334, 04:336-04:340, 04:342-04:359, 04:361-04:366, 04:368-04:375, 05:01:01:01-05:01:45, 05:03, 05:05:01-05:21, 05:23-05:102, 05:104-05:106:02, 05:108-05:122, 05:124-05:131, 05:133-05:134, 05:136-05:146, 05:148-05:190, 05:192-05:206, 05:208N-05:214, 06:09:01-06:09:02, 06:14, 06:35, 06:72, 06:143-06:144, 07:10, 07:28, 07:41, 07:43:01-07:43:02, 07:184, 07:196, 07:367, 07:536, 07:568, 08:01:01:01-08:08:02, 08:10, 08:12-08:47, 08:49-08:63, 08:65-08:82, 08:84-08:107, 08:109-08:112, 08:114-08:151, 08:153-08:188, 12:31, 12:44, 12:144, 12:233, 14:54, 15:02:01:01-15:13:01:02, 15:15-15:19, 15:21, 15:23:01-15:36, 15:38-15:54, 15:56-15:57, 15:59-15:64, 15:66-15:71, 15:73-15:101, 15:103-15:124, 15:126-15:148, 15:150-15:189N, 15:191-15:194, 16:45, 17:01:01:02-17:46, 18:01:01-18:12, B*73:01^w
94¹²	135 bp	800 bp	*01:169:02, 01:177, 02:02:13, 02:02:29, 02:02:38, 03:02:01-03:02:09, 03:02:11-03:03:20, 03:03:22-03:03:50, 03:03:52-03:04:14, 03:04:16-03:04:24, 03:04:27-03:11:02, 03:13:01:01-03:17:02, 03:18:02-03:38:02, 03:40:01-03:64:01, 03:65-03:66, 03:67 ^w , 03:68-03:98, 03:100-03:117, 03:119:01-03:136, 03:138-03:143, 03:146-03:155, 03:157-03:165:02, 03:167-03:169Q, 03:171, 03:173-03:181, 03:183-03:194, 03:196-03:230, 03:232-03:247, 03:249-03:263:03, 03:265N-03:277N, 03:278 ^w , 03:279-03:294, 03:295 ^w , 03:296:01-03:323N, 03:325-03:341, 03:343, 03:345-03:453, 03:455-03:458, 03:460-03:466, 04:07:02, 04:32, 04:77, 04:265, 06:03:01, 06:132:01-06:132:02, 07:64, 07:96:01-07:96:02, 07:314:02, 07:402, 07:578, 07:756, 14:25, 15:02:10, 15:02:17, 15:43, 18:03, B*13:13:02, B*40:01:49-40:01:50
95¹²	160 bp, 230 bp	1070 bp	*04:14, 04:42:01-04:42:02, 04:68, 04:220, 05:112, 06:02:01:01-06:02:01:17, 06:02:03-06:02:71, 06:04:01-06:75, 06:78-06:131, 06:133-06:263N, 07:01:01:01-07:01:40, 07:01:41 ^w , 07:01:42-07:02:07, 07:02:09-07:02:28, 07:02:30-07:02:40, 07:02:41 ^w , 07:02:42-07:02:90, 07:02:92-07:25, 07:27:01-07:32N, 07:35-07:38:02, 07:41-07:63, 07:65-07:91, 07:93-07:95, 07:97-07:138, 07:140-07:151, 07:153-07:155, 07:157-07:176, 07:178-07:209, 07:211-07:222, 07:223 ^w , 07:224-07:237, 07:239-07:245, 07:247-07:266, 07:268-07:294, 07:297-07:313, 07:315-07:316, 07:318-07:321, 07:323-07:334, 07:336-07:350N, 07:352-07:401, 07:403-07:404, 07:406-07:414, 07:415 ^w -07:416 ^w , 07:417-07:448,

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96¹⁴	-	-	Negative control

¹Alleles are assigned by the presence of specific PCR product(s). However, the sizes of the specific PCR products may be helpful in the interpretation of HLA-C low resolution SSP typings.

When the primers in a primer mix can give rise to HLA-specific PCR products of more than one length this is indicated if the size difference is more than 20 base pairs. Size differences of 20 base pairs or less are not given. For high resolution SSP kits, the alleles listed are specified according to amplicon length.

Nonspecific amplifications, i.e. a ladder or a smear of bands, may sometimes be seen. GC-rich primers have a higher tendency of giving rise to nonspecific amplifications than other primers.

PCR fragments longer than the control bands may sometimes be observed. Such bands should be disregarded and do not influence the interpretation of the SSP typings.

PCR fragments migrating faster than the control bands, but slower than a 400 bp fragment may be seen in some gel read-outs. Such bands can be disregarded and do not influence the interpretation of the SSP typings.

Some primers may give rise to primer oligomer artifacts. Sometimes this phenomenon is an inherent feature of the primer pair(s) of a primer mix. More often it is due to other factors such as too low amount of DNA in the PCR reactions, taking too long time in setting up the PCR reactions, working at elevated room temperature or using thermal cyclers that are not pre-heated.

²The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 1070 or 800 base pairs respectively, well distribution as outlined in the table. Well number 73 contains the shorter, 800 bp, internal positive control band. The well distribution of the internal controls can help in orientation of the kit on gel photo, as well as allow for kit identification. In the presence of a specific amplification the intensity of the control band often decreases.

³For several HLA Class I alleles 1st and/or 4th exon(s) and beyond, as well as intron nucleotide sequences, are not available. In these instances it is not known whether some of the primers of the SSP sets are completely matched with the target sequences or not. Assumption is made that unknown sequences in these regions are conserved within allelic groups.

⁴HLA-specific PCR products shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR products.

⁵Primer mix 74 will for most C*02 alleles give rise to two specific PCR fragments.

⁶Primer mix 76 will for most C*03 alleles give rise to two specific PCR fragments.

⁷Primer mix 81 will for most C*07 alleles give rise to two specific PCR fragments.

⁸Primer mix 82 will for most C*08 alleles give rise to multiple specific PCR fragments.

⁹Primer mix 89 will for most C*15 alleles give rise to two specific PCR fragments.

¹⁰Primer mixes 84, 85 and 91 may have tendencies of unspecific amplifications.

¹¹Primer mixes 88 and 90 have a tendency to giving rise to primer oligomer formation.

¹²Primer mixes 75, 78, 80, 82, 87, 94 and 95 may give rise to a lower yield of HLA-specific PCR fragments than the other HLA-C low resolution primer mixes.

¹³Primer mix 86 might faintly amplify most C*01 and the C*14 alleles.

¹⁴Primer mix 96 contains a negative control, which will amplify a majority of HLA amplicons as well as the amplicons generated by the control primer pairs matching the human growth hormone gene. HLA-specific PCR product sizes range from 75 to 200 base pairs and the PCR product generated by the HGH positive control primer pair is 200 base pairs.

Abbreviations

w: might be weakly amplified.

?: nucleotide sequence information not available for the primer matching sequence.

101.702-24/06 – including *Taq* pol., IFU-01
101.702-24u/06u – without *Taq* pol., IFU-02

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“Instructions for Use” (IFU)

Lot No.: **4K4**

Lot-specific information

HLA-A LOW PRIMER SPECIFICATION

Well No.	1	2	3	4	5	6	7	8	9	10	11	12
Length of spec.	120	175	205	190	160	135	175	165	80	80	80	125
PCR product	145	215	235		335	200	205	200		240	175	160
	225	255			505						500	190
		365										
		415										
Length of int.	800	800	1070	800	1070	800	1070	800	800	800	1070	800
pos. control ¹												
5'-primer(s) ²	98	48	359	98	144	176	98	98	257	98	301	103
	5'-CTT 3'	5'-gCT 3'	5'-gCA 3'	5'-CTA 3'	5'-gCC 3'	5'-gCA 3'	5'-CTC 3'	5'-CTA 3'	5'-Cgg 3'	5'-CTA 3'	5'-Cgg 3'	5'-CCT 3'
	103	78	363	413	317	368	368	102	259	261	302	415
	5'-CCT 3'	5'-TCT 3'	5'-ATA 3'	5'-CCg 3'	5'-gCT 3'	5'-gTT 3'	5'-gTT 3'	5'-ACA 3'	5'-AgA 3'	5'-AAC 3'	5'-ggA 3'	5'-ggT 3'
	123	106	363					413	261		385	423
	5'-AgT 3'	5'-CCA 3'	5'-ATA 3'					5'-CCg 3'	5'-AAC 3'		5'-ggC 3'	5'-gCT 3'
	363								266			
	5'-ATA 3'								5'-ACg 3'			
3'-primer(s) ³	203	240	527	256	265	270	259	259	302	299	341	257
	5'-TCT 3'	5'-ggA 3'	5'-CCA 3'	5'-CTg 3'	5'-CCC 3'	5'-ACA 3'	5'-gTT 3'	5'-gTT 3'	5'-ggC 3'	5'-TCg 3'	5'-CgT 3'	5'-gCA 3'
	545	292	527	559	368	521	502	259	303	308	521	506
	5'-AgA 3'	5'-gTg 3'	5'-CCT 3'	5'-CCg 3'	5'-CAA 3'	5'-ggg 3'	5'-CTT 3'	5'-gTT 3'	5'-AgA 3'	5'-TCT 3'	5'-ggg 3'	5'-TgT 3'
			527			534	539	538				538
			5'-CCT 3'			5'-CgT 3'	5'-TCT 3'	5'-CCA 3'				5'-CCg 3'
			555									559
			5'-CCA 3'									5'-CTC 3'
			555									559
			5'-gCA 3'									5'-CgT 3'
												559
												5'-CgC 3'
												563
												5'-CgA 3'
Well No.	1	2	3	4	5	6	7	8	9	10	11	12

101.702-24/06 – including *Taq* pol., IFU-01
101.702-24u/06u – without *Taq* pol., IFU-02

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Lot No.: **4K4**

Lot-specific information

Well No.	13	14	15	16	17	18	19	20	21	22	23	24
Length of spec.	180	80	90	240	140	200	340	210	65	85	80	360
PCR product	225	115	135	380	180	390	375	240	240	240	160	445
		200	205	410	240				375	400	240	
		240			260				545		495	
		460										
Length of int. pos. control ¹	1070	1070	1070	1070	1070	1070	800	800	800	800	800	1070
5'-primer(s) ²	98	98	203	41	98	41	302	78	28	47	176	257
	5'-CTT 3'	5'-CAC 3'	5'-gAA 3'	5'-CTT 3'	5'-CTT 3'	5'-CTT 3'	5'-ggA 3'	5'-TCT 3'	5'-TCg 3'	5'-g.T 3'	5'-gCA 3'	5'-Cgg 3'
	414	219	362	355	180	98	302	106	261	78	261	341
	5'-CAG 3'	5'-gCA 3'	5'-ggT 3'	5'-CCg 3'	5'-TTT 3'	5'-CAC 3'	5'-ggA 3'	5'-CCA 3'	5'-AAC 3'	5'-TCT 3'	5'-AAC 3'	5'-ggC 3'
	423	238	363		203		341	2 nd I	502	521	341	
	5'-gCT 3'	5'-AgA 3'	5'-ATA 3'		5'-gAA 3'		5'-ggA 3'	5'-CCT 3'	5'-CCC 3'	5'-ggT 3'	5'-ggA 3'	
		355	363		418			2 nd I		527	355	
		5'-CCg 3'	5'-ATA 3'		5'-AgC 3'			5'-ggC 3'		5'-TgC 3'	5'-CCC 3'	
		489	363								362	
		5'-gCA 3'	5'-ATA 3'								5'-gAg 3'	
			369								362	
			5'-TAC 3'								5'-gAg 3'	
3'-primer(s) ³	282	180	299	238	290	256	397	265	97	265	292	418
	5'-gAC 3'	5'-TCA 3'	5'-CCA 3'	5'-CCT 3'	5'-CAA 3'	5'-CCC 3'	5'-gAg 3'	5'-CCC 3'	5'-ggT 3'	5'-CCC 3'	5'-gTg 3'	5'-gTC 3'
	282	257	411	238	299	259		282	355	282	292	
	5'-gAC 3'	5'-gCA 3'	5'-TCA 3'	5'-CCT 3'	5'-TCT 3'	5'-gTT 3'		5'-gAC 3'	5'-gAC 3'	5'-gAC 3'	5'-gTT 3'	
	559	418	526	243	317	261		282	524	282	299	
	5'-CCC 3'	5'-gTC 3'	5'-CCA 3'	5'-TCA 3'	5'-ggA 3'	5'-gTg 3'		5'-gAC 3'	5'-CAT 3'	5'-gAC 3'	5'-TCT 3'	
	560	555		265	555	265		502		570	555	
	5'-ACC 3'	5'-CCA 3'		5'-CCC 3'	5'-CCA 3'	5'-CCC 3'		5'-CTT 3'		5'-CAC 3'	5'-CCA 3'	
				282		265		506				
				5'-gAC 3'		5'-CCC 3'		5'-TgT 3'				
				555		265						
				5'-CCA 3'		5'-CCA 3'						
Well No.	13	14	15	16	17	18	19	20	21	22	23	24

¹The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 1070 or 800 base pairs respectively, well distribution as outlined in the table. Well number 1 contains the shorter, 800 bp, internal positive control band. The well distribution of the internal controls can help in orientation of the kit on gel photo, as well as allow for kit identification. In the presence of a specific amplification the intensity of the control band often decreases.

²The nucleotide position matching the specificity-determining 3'-end of the primer is given. Nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

³The nucleotide position matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

101.702-24/06 – including *Taq* pol., IFU-01
101.702-24u/06u – without *Taq* pol., IFU-02

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Lot No.: **4K4**

Lot-specific information

HLA-B LOW PRIMER SPECIFICATION

Well No.	25	26	27	28	29	30	31	32	33	34	35	36
Length of spec. PCR product	110	215	140	105	185	190	290	165	165	180	100	280
			235	140	235			225	190		195	
				265				285	390			
								330				
Length of int. pos. control ¹	800	1070	1070	800	800	800	1070	1070	1070	800	1070	1070
5'-primer(s) ²	527	97	209	103	103	103	45	45	45	420	206	419
	5'-TgA 3'	5'-TCg 3'	5'-ggC 3'	5'-CCg 3'	5'-CCT 3'	5'-CCg 3'	5'-ggA 3'	5'-ggA 3'	5'-ggA 3'	5'-TTA 3'	5'-AgA 3'	5'-gTC 3'
	539		363	103	103	418		357	435		416	
	5'-gCg 3'		5'-AgC 3'	5'-CCg 3'	5'-CCT 3'	5'-Agg 3'		5'-Tgg 3'	5'-AAA 3'		5'-CCg 3'	
	540		363	361	363			412			420	
	5'-gAC 3'		5'-AgC 3'	5'-AgT 3'	5'-AAT 3'			5'-ATA 3'			5'-TTA 3'	
				363							420	
				5'-AgC 3'							5'-TTC 3'	
3'-primer(s) ³	605	272	309	167	246	246	165	206	266	559	256	3 rd I
	5'-gCT 3'	5'-Tgg 3'	5'-gTg 3'	5'-ACA 3'	5'-TAT 3'	5'-TAT 3'	5'-Tgg 3'	5'-CCT 3'	5'-TCC 3'	5'-CTC 3'	5'-CCC 3'	5'-TAT 3'
		272	312	193	246	572		538	559		272	
		5'-TgA 3'	5'-gCC 3'	5'-CgT 3'	5'-TAT 3'	5'-gCC 3'		5'-gTC 3'	5'-CAg 3'		5'-Tgg 3'	
		272	559	193	559			603	583		572	
		5'-TgT 3'	5'-CAg 3'	5'-CgT 3'	5'-CTC 3'			5'-gTg 3'	5'-gTg 3'		5'-gCg 3'	
				463								
				5'-gCT 3'								
				583								
				5'-gTg 3'								

Well No.	37	38	39	40	41	42	43	44	45	46	47	48
Length of spec. PCR product	195	105	115	80	100	140	55	210	170	110	395	160
		395	150		150		245					425
		435					390					
							415					
Length of int. pos. control ¹	1070	800	1070	1070	800	1070	1070	800	800	1070	1070	1070
5'-primer(s) ²	142	45	161	167	349	206	45	142	409	246	44	44
	5'-TCT 3'	5'-ggA 3'	5'-Cgg 3'	5'-gCT 3'	5'-CTT 3'	5'-gAC 3'	5'-ggA 3'	5'-TCT 3'	5'-ggC 3'	5'-gAA 3'	5'-ggC 3'	5'-ggC 3'
	419	540			355		368	368	420			357
	5'-gTC 3'	5'-gAC 3'			5'-TCA 3'		5'-gTT 3'	5'-gTC 3'	5'-TTA 3'			5'-Tgg 3'
							557					
							5'-ggA 3'					
3'-primer(s) ³	301	272	234	204	412	301	259	311	544	317	272	302
	5'-gTC 3'	5'-TgC 3'	5'-TCT 3'	5'-TCT 3'	5'-gTT 3'	5'-gCT 3'	5'-gTT 3'	5'-ggg 3'	5'-ggT 3'	5'-ggA 3'	5'-TgC 3'	5'-ggC 3'
	301	272	272		463	302	259	311		320		302
	5'-gTC 3'	5'-TgT 3'	5'-TgA 3'		5'-gCT 3'	5'-ggC 3'	5'-gTT 3'	5'-ggg 3'		5'-AgT 3'		5'-ggT 3'
	570	309	272			311	266	538				477
	5'-CCg 3'	5'-ATC 3'	5'-Tgg 3'			5'-ggT 3'	5'-TCC 3'	5'-gTC 3'				5'-gCg 3'
	572	605				312	272					
	5'-gCg 3'	5'-gCT 3'				5'-AgT 3'	5'-Tgg 3'					
							292					
							5'-gTA 3'					
							572					
							5'-gCg 3'					

101.702-24/06 – including *Taq* pol., IFU-01
101.702-24u/06u – without *Taq* pol., IFU-02

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Lot No.: **4K4**

Lot-specific information

Well No.	49	50	51	52	53	54	55	56	57	58	59	60
Length of spec. PCR product	180	130	105	325	80	215	130	90	90	55	120	430
		290			115		280	410	175	100	210	
		465			160					145		
					195					395		
					225					430		
					260							
Length of int. pos. control ¹	1070	1070	1070	800	1070	800	800	1070	1070	1070	800	1070
5'-primer(s) ²	355 5'-TCA 3'	72 5'-gCT 3'	540 5'-gAC 3'	1 st I 5'-CAG 3'	355 5'-TCA 3'	141 5'-ATT 3'	209 5'-ggC 3'	41 5'-CTg 3'	209 5'-ggC 3'	48 5'-gCC 3'	357 5'-Tgg 3'	49 5'-CAG 3'
	363 5'-Agg 3'	103 5'-CCT 3'			418 5'-Agg 3'	357 5'-Tgg 3'	209 5'-ggg 3'	368 5'-gTT 3'	363 5'-AgC 3'	206 5'-gAA 3'		
		209 5'-ggC 3'			499 5'-TCT 3'		355 5'-TCA 3'			259 5'-ggg 3'		
3'-primer(s) ³	499 5'-ggA 3'	193 5'-CgT 3'	603 5'-gTg 3'	282 5'-gCC 3'	538 5'-gTC 3'	309 5'-ATC 3'	299 5'-TCA 3'	282 5'-gCC 3'	259 5'-gTT 3'	272 5'-TgT 3'	435 5'-TCT 3'	309 5'-ATC 3'
		193 5'-TgT 3'	603 5'-gTg 3'		572 5'-gCA 3'	538 5'-gTC 3'	583 5'-gTg 3'	418 5'-gTC 3'	499 5'-ggA 3'	309 5'-ATC 3'	527 5'-CCT 3'	
		387 5'-TCg 3'	605 5'-gCT 3'		572 5'-gCg 3'		605 5'-gCT 3'					
					573 5'-AgT 3'							
Well No.	49	50	51	52	53	54	55	56	57	58	59	60

Well No.	61	62	63	64	65	66	67	68	69	70	71	72
Length of spec. PCR product	145	300	160	180	180	90	90	95	115	360	350	285
			370	210	205	240			150			
Length of int. pos. control ¹	1070	1070	1070	1070	1070	800	1070	1070	1070	1070	1070	800
5'-primer(s) ²	206 5'-gAA 3'	1 st I 5'-CAG 3'	15 5'-gCA 3'	141 5'-ATT 3'	97 5'-TCg 3'	209 5'-ggC 3'	207 5'-ACC 3'	206 5'-gAC 3'	165 5'-ACC 3'	1 st I 5'-CAG 3'	1 st I 5'-CAG 3'	355 5'-TCA 3'
			319 5'-TCC 3'	420 5'-TTA 3'	420 5'-TTA 3'	209 5'-ggA 3'	208 5'-CgT 3'		463 5'-TgA 3'			363 5'-AgC 3'
			418 5'-Agg 3'			362 5'-ggT 3'	209 5'-ggA 3'					
						369 5'-TAC 3'						
3'-primer(s) ³	311 5'-ggT 3'	259 5'-CTC 3'	207 5'-TCC 3'	311 5'-ggT 3'	259 5'-gTT 3'	256 5'-CCC 3'	256 5'-CTC 3'	259 5'-gTT 3'	272 5'-TgC 3'	317 5'-ggA 3'	311 5'-ggT 3'	603 5'-gTg 3'
		259 5'-CTC 3'	226 5'-CAC 3'	559 5'-CgT 3'	559 5'-CAG 3'	259 5'-CTT 3'	256 5'-CCC 3'		538 5'-CCA 3'	320 5'-AgT 3'		605 5'-gCT 3'
		262 5'-TgC 3'	538 5'-gTC 3'			263 5'-gTT 3'	420 5'-gCT 3'					
						559 5'-CgT 3'						
Well No.	61	62	63	64	65	66	67	68	69	70	71	72

101.702-24/06 – including *Taq* pol., IFU-01
101.702-24u/06u – without *Taq* pol., IFU-02

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Lot No.: **4K4**

Lot-specific information

¹The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 1070 or 800 base pairs respectively, well distribution as outlined in the table. Well number 25 contains the shorter, 800 bp, internal positive control band. The well distribution of the internal controls can help in orientation of the kit on gel photo, as well as allow for kit identification. In the presence of a specific amplification the intensity of the control band often decreases.

²The nucleotide position matching the specificity-determining 3'-end of the primer is given. Nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

³The nucleotide position matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

101.702-24/06 – including *Taq* pol., IFU-01
101.702-24u/06u – without *Taq* pol., IFU-02

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Lot No.: **4K4**

Lot-specific information

HLA-C LOW PRIMER SPECIFICATION

Well No.	73	74	75	76	77	78	79	80	81	82	83	84
Length of spec.	90	130	280	85	280	135	170	125	245	110	155	100
PCR product	150	200		170		330	390	355	425	165	255	155
		270		275			445			390	340	220
		300										
Length of int.	800	800	800	1070	800	800	1070	800	800	800	1070	800
pos. control ¹												
5'-primer(s) ²	89	47	105	98	105	47	1 st	28	47	1 st	1 st	361
	5'-gAA 3'	5'-Agg 3'	5'-gCT 3'	5'-CTT 3'	5'-gCT 3'	5'-Agg 3'	5'-CgA 3'	5'-TCA 3'	5'-Agg 3'	5'-CgA 3'	5'-CgA 3'	5'-AgT 3'
	89	89		355		112	176	2 nd	648	176	419	419
	5'-gAA 3'	5'-gAA 3'		5'-TCA 3'		5'-CCT 3'	5'-gCA 3'	5'-CCA 3'	5'-CAC 3'	5'-gCA 3'	5'-gTC 3'	5'-gTC 3'
	89	2 nd		459		118	527			527		
	5'-gAA 3'	5'-CCA 3'		5'-gAT 3'		5'-CCA 3'	5'-TgA 3'			5'-TAC 3'		
	98	703										
	5'-CTT 3'	5'-CTA 3'										
3'-primer(s) ³	142	176	343	142	343	201	302	213	302	302	118	474
	5'-TgA 3'	5'-ACT 3'	5'-C 3'	5'-TgA 3'	5'-T 3'	5'-CTT 3'	5'-ggT 3'	5'-Cgg 3'	5'-ggC 3'	5'-ggC 3'	5'-gCT 3'	5'-gCA 3'
	201	559	343	589		218	307	409	853	595	218	477
	5'-CTT 3'	5'-CTC 3'	5'-g 3'	5'-CTT 3'		5'-gCT 3'	5'-CCA 3'	5'-ATg 3'	5'-CAT 3'	5'-CCC 3'	5'-gCT 3'	5'-gCA 3'
	201	861					3 rd	420			302	538
	5'-CTC 3'	5'-TCg 3'					5'-gCA 3'	5'-gCT 3'			5'-ggT 3'	5'-gCA 3'
											304	
											5'-CAA 3'	
											539	
											5'-TCT 3'	
Well No.	73	74	75	76	77	78	79	80	81	82	83	84

101.702-24/06 – including *Taq* pol., IFU-01
101.702-24u/06u – without *Taq* pol., IFU-02

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Lot No.: **4K4**

Lot-specific information

Well No.	85	86	87	88	89	90	91	92	93	94	95
Length of spec.	120	160	130	160	110	180	225	215	325	135	160
PCR product	250	210	255	260	325	210	250	420	380		230
			555	445		240	290				
Length of int.	800	800	1070	1070	800	1070	800	800	1070	800	1070
pos. control ¹											
5'-primer(s) ²	201	97	98	85	201	201	2 nd I	47	355	105	97
	5'-CCA 3'	5'-TCg 3'	5'-CTA 3'	5'-CCg 3'	5'-CCA 3'	5'-CCA 3'	5'-CCA 3'	5'-Agg 3'	5'-TCA 3'	5'-gCT 3'	5'-TCg 3'
	218	361	368	98	409	2 nd I		117	412	112	97
	5'-ggA 3'	5'-AgT 3'	5'-gTg 3'	5'-CTC 3'	5'-ggC 3'	5'-CCA 3'		5'-CCT 3'	5'-ATA 3'	5'-CCT 3'	5'-TTg 3'
	2 nd I			98		361		361		459	361
	5'-CCA 3'			5'-CTT 3'		5'-AgT 3'		5'-AgT 3'		5'-gAT 3'	5'-AgT 3'
				98							418
				5'-CAC 3'							5'-Agg 3'
				194							419
				5'-CgT 3'							5'-gTC 3'
				527							419
				5'-TgA 3'							5'-gTT 3'
3'-primer(s) ³	289	218	312	311	270	341	512	289	3 rd I	201	213
	5'-AgC 3'	5'-gCT 3'	5'-AgT 3'	5'-ggT 3'	5'-TAg 3'	5'-CgT 3'	5'-CCA 3'	5'-AgT 3'	5'-CTC 3'	5'-CTC 3'	5'-Cgg 3'
	289	527	312	317	3 rd I	343	538	302		559	289
	5'-AgC 3'	5'-CCg 3'	5'-AgT 3'	5'-CgT 3'	5'-CTC 3'	5'-T 3'	5'-gTC 3'	5'-ggT 3'		5'-CTC 3'	5'-AgC 3'
	291	538	361	3 rd I		343	580	527			289
	5'-TCg 3'	5'-CCA 3'	5'-CCA 3'	5'-gCA 3'		5'-g 3'	5'-TCC 3'	5'-CCg 3'			5'-AgC 3'
	539	538	459			527		538			539
	5'-TCT 3'	5'-gCA 3'	5'-AgA 3'			5'-CCg 3'		5'-CCg 3'			5'-TCT 3'
						527					
						5'-CCg 3'					
						527					
						5'-CCg 3'					
						527					
						5'-CCg 3'					
						530					
						5'-CCA 3'					
Well No.	85	86	87	88	89	90	91	92	93	94	95

¹The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 1070 or 800 base pairs respectively, well distribution as outlined in the table. Well number 73 contains the shorter, 800 bp, internal positive control band. The well distribution of the internal controls can help in orientation of the kit on gel photo, as well as allow for kit identification. In the presence of a specific amplification the intensity of the control band often decreases.

²The nucleotide position matching the specificity-determining 3'-end of the primer is given. Nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

³The nucleotide position matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

101.702-24/06 – including *Taq* pol., IFU-01
101.702-24u/06u – without *Taq* pol., IFU-02

Visit Visit <https://labproducts.caredx.com> for
“Instructions for Use” (IFU)

Lot No.: **4K4**

Lot-specific information

CELL LINE VALIDATION SHEET																				
HLA-A low resolution primer set ²																				
					Well															
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
				Prod. No.:	201900801	201900802	201900803	201900804	201900805	201900806	201900807	201900808	201900809	201900810	201900811	201900812	201900813	201900814	201900815	201900816
	IHWC cell line ¹	A*	A*																	
1	9001 SA	*24:02			-	-	-	-	+	-	+	-		-	-	-	-	-	-	-
2	9280 LK707	*02:01			-	+	-	-	-	-	-	-		-	-	-	-	-	-	-
3	9011 E4181324	*01:01			+	-	-	+	-	-	-	-		-	-	-	-	-	-	-
4	9275 GU373	*30:01			-	-	-	-	-	-	-	-		-	-	-	-	-	+	-
5	9009 KAS011	*01:01			+	-	-	+	-	-	-	-		-	-	-	-	-	-	-
6	9353 SM	*02:01	*26:03		-	+	-	-	-	-	-	+		-	-	+	-	+	-	-
7	9020 QBL	*26:01			-	-	-	-	-	-	-	+		-	+	-	-	+	-	-
8	9025 DEU	*31:01			-	-	-	-	-	-	-	-		-	-	-	-	-	-	+
9	9026 YAR	*26:01			-	-	-	-	-	-	-	+		-	+	-	-	+	-	-
10	9107 LKT3	*24:02			-	-	-	-	+	-	+	-		-	-	-	-	-	-	-
11	9051 PITOUT	*29:02			-	-	-	-	-	-	-	-		-	-	-	-	+	-	-
12	9052 DBB	*02:01			-	+	-	-	-	-	-	-		-	-	-	-	-	-	-
13	9004 JESTHOM	*02:01			-	+	-	-	-	-	-	-		-	-	-	-	-	-	-
14	9071 OLG A	*31:01			-	-	-	-	-	-	-	-		-	-	-	-	-	-	+
15	9075 DKB	*24:02			-	-	-	-	+	-	+	-		-	-	-	-	-	-	-
16	9037 SWEIG007	*29:02			-	-	-	-	-	-	-	-		-	-	-	-	+	-	-
17	9282 CTM3953540	*03:01	*80:01		-	-	+	-	-	+	-	-		-	-	-	-	+	-	-
18	9257 32367	*33:03	*74:01		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
19	9038 BM16	*02:01			-	+	-	-	-	-	-	-		-	-	-	-	-	-	-
20	9059 SLE005	*02:01			-	+	-	-	-	-	-	-		-	-	-	-	-	-	-
21	9064 AMALA	*02:17			-	+	-	-	-	-	W	-		-	-	-	-	-	-	-
22	9056 KOSE	*02:01			-	+	-	-	-	-	-	-		-	-	-	-	-	-	-
23	9124 IHL	*02:01	*34:01		-	+	-	-	-	-	-	+		-	-	+	+	-	-	-
24	9035 JBUSH	*32:01			-	-	-	-	-	-	-	-		+	-	-	-	-	-	-
25	9049 IBW9	*33:01			-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
26	9285 WT49	*02:05			-	+	-	-	-	-	-	-		-	-	-	-	-	-	-
27	9191 CH1007	*24:10	*29:01		-	-	-	-	+	-	+	-		-	-	-	-	+	-	-
28	9320 BEL5GB	*02:01	*29:02		-	+	-	-	-	-	-	-		-	-	-	-	+	-	-
29	9050 MOU	*29:02			-	-	-	-	-	-	-	-		-	-	-	-	+	-	-
30	9021 RSH	*30:01	*68:02		-	-	-	-	-	-	-	+		-	-	-	-	-	+	-
31	9019 DUCAF	*30:02			-	-	-	-	-	-	-	-		-	-	-	-	-	+	-
32	9297 HAG	*02:01			-	+	-	-	-	-	-	-		-	-	-	-	-	-	-
33	9098 MT14B	*31:01			-	-	-	-	-	-	-	-		-	-	-	-	-	-	+
34	9104 DHIF	*31:01			-	-	-	-	-	-	-	-		-	-	-	-	-	-	+
35	9302 SSTO	*32:01			-	-	-	-	-	-	-	-		+	-	-	-	-	-	-
36	9024 KT17	*02:06	*11:01		-	+	-	+	-	-	-	-		-	-	+	-	-	-	-
37	9065 HHKB	*03:01			-	-	+	-	-	-	-	-		-	-	-	-	+	-	-
38	9099 LZL	*02:17			-	+	-	-	-	-	W	-		-	-	-	-	-	-	-
39	9315 CML	*01:01	*03:01		+	-	+	+	-	-	-	-		-	-	-	-	+	-	-
40	9134 WHONP199	*02:07	*30:01		-	+	-	-	-	-	-	-		-	-	-	-	-	+	-
41	9055 H0301	*03:01			-	-	+	-	-	-	-	-		-	-	-	-	+	-	-
42	9066 TAB089	*02:07			-	+	-	-	-	-	-	-		-	-	-	-	-	-	-
43	9076 T7526	*02:06	*02:07		-	+	-	-	-	-	-	-		-	-	-	-	-	-	-
44	9057 TEM	*66:01			-	-	-	-	-	-	-	+		-	-	+	-	+	-	-
45	9239 SHJO	*23:01	*24:02		-	-	-	-	+	+	+	-		-	-	-	-	-	-	-
46	9013 SCHU	*03:01			-	-	+	-	-	-	-	-		-	-	-	-	+	-	-
47	9045 TUBO	*02:16	*03:01		-	+	+	-	-	-	-	-		-	-	-	-	+	-	-
48	9303 TER-ND	*02:01	*11:01		-	+	-	+	-	-	-	-		-	-	+	-	-	-	-

101.702-24/06 – including *Taq* pol., IFU-01
101.702-24u/06u – without *Taq* pol., IFU-02

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Lot No.: **4K4**

Lot-specific information

CELL LINE VALIDATION SHEET													
HLA-A low resolution primer set ²													
					Prod. No.:	Well							
						17	18	19	20	21	22	23	24
						201900817	201900818	201900819	201907920	201900821	201900822	201900823	201907924
	IHCW cell line ¹			A*	A*								
1	9001	SA		*24:02		-	-	-	-	-	-	-	-
2	9280	LK707		*02:01		-	-	-	-	-	-	-	-
3	9011	E4181324		*01:01		-	-	-	-	-	-	-	-
4	9275	GU373		*30:01		-	-	-	-	-	-	-	-
5	9009	KAS011		*01:01		-	-	-	-	-	-	-	-
6	9353	SM		*02:01	*26:03	-	-	-	-	-	-	+	-
7	9020	QBL		*26:01		-	-	-	-	-	-	-	-
8	9025	DEU		*31:01		-	-	-	-	-	-	-	-
9	9026	YAR		*26:01		-	-	-	-	-	-	-	-
10	9107	LKT3		*24:02		-	-	-	-	-	-	-	-
11	9051	PITOUT		*29:02		-	-	-	-	-	-	-	-
12	9052	DBB		*02:01		-	-	-	-	-	-	-	-
13	9004	JESTHOM		*02:01		-	-	-	-	-	-	-	-
14	9071	OLGA		*31:01		-	-	-	-	-	-	-	-
15	9075	DKB		*24:02		-	-	-	-	-	-	-	-
16	9037	SWEIG007		*29:02		-	-	-	-	-	-	-	-
17	9282	CTM3953540		*03:01	*80:01	-	-	-	-	-	-	+	-
18	9257	32367		*33:03	*74:01	-	+	+	-	-	-	-	-
19	9038	BM16		*02:01		-	-	-	-	-	-	-	-
20	9059	SLE005		*02:01		-	-	-	-	-	-	-	-
21	9064	AMALA		*02:17		-	-	-	-	-	-	-	-
22	9056	KOSE		*02:01		-	-	-	-	-	-	-	-
23	9124	IHL		*02:01	*34:01	-	-	-	-	-	-	-	-
24	9035	JBUSH		*32:01		+	-	-	-	-	-	-	-
25	9049	IBW9		*33:01		-	+	-	-	-	-	-	-
26	9285	WT49		*02:05		-	-	-	-	-	-	-	-
27	9191	CH1007		*24:10	*29:01	-	-	-	-	-	-	-	-
28	9320	BEL5GB		*02:01	*29:02	-	-	-	-	-	-	-	-
29	9050	MOU		*29:02		-	-	-	-	-	-	-	-
30	9021	RSH		*30:01	*68:02	-	-	-	+	-	-	-	-
31	9019	DUCAF		*30:02		-	-	-	-	-	-	-	-
32	9297	HAG		*02:01		-	-	-	-	-	-	-	-
33	9098	MT14B		*31:01		-	-	-	-	-	-	-	-
34	9104	DHIF		*31:01		-	-	-	-	-	-	-	-
35	9302	SSTO		*32:01		+	-	-	-	-	-	-	-
36	9024	KT17		*02:06	*11:01	-	-	-	-	-	-	-	-
37	9065	HHKB		*03:01		-	-	-	-	-	-	-	-
38	9099	LZL		*02:17		-	-	-	-	-	-	-	-
39	9315	CML		*01:01	*03:01	-	-	-	-	-	-	-	-
40	9134	WHONP199		*02:07	*30:01	-	-	-	-	-	-	-	-
41	9055	H0301		*03:01		-	-	-	-	-	-	-	-
42	9066	TAB089		*02:07		-	-	-	-	-	-	-	-
43	9076	T7526		*02:06	*02:07	-	-	-	-	-	-	-	-
44	9057	TEM		*66:01		-	-	-	-	-	-	-	-
45	9239	SHJO		*23:01	*24:02	-	-	-	-	-	-	-	-
46	9013	SCHU		*03:01		-	-	-	-	-	-	-	-
47	9045	TUBO		*02:16	*03:01	-	-	-	-	-	-	-	-
48	9303	TER-ND		*02:01	*11:01	-	-	-	-	-	-	-	-

101.702-24/06 – including *Taq* pol., IFU-01
101.702-24u/06u – without *Taq* pol., IFU-02

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“Instructions for Use” (IFU)

Lot No.: **4K4**

Lot-specific information

¹The provided cell line HLA specificities are retrieved from the <http://www.ihwg.org/hla> web site. The specificity of an individual cell line may thus be subject to change.

²The specificity of each primer solution in the kit has been tested against 48 well characterized cell line DNAs and where applicable, additional cell line DNAs.

One or more 5'- and 3'-primers in primer solutions 4, 5, 7, 8, 12, 14 to 17 and 20 to 23 were tested by separately adding one or more 3'-primers, respectively one or more 5'-primers.

One or more 5'-primers in primer solutions 1, 9, 13, 19 and 24 were tested by separately adding one or two 3'-primers. One or more 3'-primers in primer solutions 3, 10 and 18 were tested by separately adding one or two 5'-primers. In primer solutions 2, 3, 9, 11, 12, 15, 20 and 22 one or two 5'-primers were not possible to test, and in primer solutions 3, 6, 8, 9, 12, 13, 16 and 18 one or two 3'-primers were not possible to test.

101.702-24/06 – including *Taq* pol., IFU-01
101.702-24u/06u – without *Taq* pol., IFU-02

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“Instructions for Use” (IFU)

Lot No.: **4K4**

Lot-specific information

CELL LINE VALIDATION SHEET																									
HLA-B low resolution SSP kit ²																									
					Prod. No.:	Well																			
						25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40				
						201911801	201911802	201911803	201911804	201911805	201911806	201911807	201911808	201911809	201911810	201911811	201911812	201911813	201911814	201911815	201911816				
	IHCW cell line ¹			B*																					
1	9001	SA	*07:02			+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2	9280	LK707	*52:01	*73:01		-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	
3	9011	E4181324	*52:01			-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	
4	9275	GU373	*15:10	*53:01		-	-	-	-	-	-	-	+	-	-	-	+	-	+	-	-	-	-	-	
5	9009	KAS011	*37:01			-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	
6	9353	SM	*39:01	*51:01		-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	
7	9020	QBL	*18:01			-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	
8	9025	DEU	*35:01			-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	
9	9026	YAR	*38:01			-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
10	9107	LKT3	*54:01			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
11	9051	PITOUT	*44:03			-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
12	9052	DBB	*57:01			-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	
13	9004	JESTHOM	*27:05			-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	
14	9071	OLGA	*15:01	*15:20		-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	
15	9075	DKB	*40:01			-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
16	9037	SWEIG007	*40:02			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
17	9282	CTM3953540	*08:01	*55:01		-	+	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	
18	9257	32367	*14:01	*56:01		-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
19	9038	BM16	*18:01			-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	
20	9059	SLE005	*40:01			-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
21	9064	AMALA	*15:01			-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	
22	9056	KOSE	*35:03			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
23	9124	IHL	*40:02	*56:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
24	9035	JBUSH	*38:01			-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
25	9049	IBW9	*14:02			-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	
26	9285	WT49	*58:01			-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	
27	9191	CH1007	*07:05	*51:01		+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	
28	9320	BEL5GB	*44:02	*44:03		-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
29	9050	MOU	*44:03			-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
30	9021	RSH	*42:01			-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	
31	9019	DUCAF	*18:01			-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	+	-	
32	9297	HAG	*41:02			-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	
33	9098	MT14B	*40:01			-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
34	9104	DHIF	*38:01			-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
35	9302	SSTO	*44:02			-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
36	9024	KT17	*15:01	*35:01		-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	
37	9065	HHKB	*07:02			+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
38	9099	LZL	*15:01			-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	
39	9315	CML	*08:01	*27:05		-	+	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	+	-	
40	9134	WHONP199	*13:02	*46:01		-	-	+	+	-	-	+	-	-	+	-	+	-	-	-	-	-	-	-	
41	9055	H0301	*14:02			-	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	
42	9066	TAB089	*46:01			-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	
43	9076	T7526	*46:01			-	-	-	-	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	
44	9057	TEM	*38:01			-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
45	9239	SHJO	*42:01	*50:01		-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	
46	9013	SCHU	*07:02			+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
47	9045	TUBO	*51:01			-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	
48	9303	TER-ND	*35:01	*44:03		-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	

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“Instructions for Use” (IFU)

Lot-specific information

For *In Vitro* Diagnostic Use.

101.702-24/06 – including *Taq* pol., IFU-01
101.702-24u/06u – without *Taq* pol., IFU-02

Visit Visit <https://labproducts.caredx.com> for
“Instructions for Use” (IFU)

Lot No.: **4K4**

Lot-specific information

CELL LINE VALIDATION SHEET																							
HLA-B low resolution SSP kit ²																							
					Well																		
				Prod. No.:	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72			
					201911833	201911834	201911835	201911836	201911837	201911838	201911839	201911840	201911841	201911842	201911843	201911844	201911845	201911846	201911847	201911848			
	IHC cell line ¹		B*																				
1	9001	SA	*07:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+
2	9280	LK707	*52:01	*73:01	-	+	+	+	-	+	-	-	-	-	-	-	-	+	+	+	+	+	+
3	9011	E4181324	*52:01		-	+	+	+	-	+	-	-	-	-	-	-	-	+	+	-	-	-	-
4	9275	GU373	*15:10	*53:01	-	-	-	+	-	-	-	-	-	-	-	+	-	+	+	-	-	-	-
5	9009	KAS011	*37:01		-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-
6	9353	SM	*39:01	*51:01	-	-	+	+	-	-	-	-	-	-	-	-	+	-	+	+	-	-	-
7	9020	QBL	*18:01		-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-
8	9025	DEU	*35:01		-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-
9	9026	YAR	*38:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
10	9107	LKT3	*54:01		-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	+	-	-	-
11	9051	PITOUT	*44:03		-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-
12	9052	DBB	*57:01		-	-	-	+	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-
13	9004	JESTHOM	*27:05		-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-
14	9071	OLGA	*15:01	*15:20	-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	+	-	-	-
15	9075	DKB	*40:01		-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	+	-	-	-
16	9037	SWEIG007	*40:02		-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	+	-	-	-
17	9282	CTM3953540	*08:01	*55:01	-	-	+	-	-	-	-	+	-	-	-	-	-	-	-	+	-	+	+
18	9257	32367	*14:01	*56:01	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	+	-	-	-
19	9038	BM16	*18:01		-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-
20	9059	SLE005	*40:01		-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	+	-	-	-
21	9064	AMALA	*15:01		-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	+	-	-	-
22	9056	KOSE	*35:03		-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-
23	9124	IHL	*40:02	*56:02	-	-	-	-	+	+	-	-	+	-	+	-	-	-	-	+	-	-	-
24	9035	JBUSH	*38:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
25	9049	IBW9	*14:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
26	9285	WT49	*58:01		-	-	-	+	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-
27	9191	CH1007	*07:05	*51:01	-	-	+	+	-	-	-	-	-	-	-	-	+	-	+	+	+	+	+
28	9320	BEL5GB	*44:02	*44:03	-	-	-	-	-	+	+	-	-	-	-	-	-	-	+	-	-	-	-
29	9050	MOU	*44:03		-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	-	-	-	-
30	9021	RSH	*42:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-
31	9019	DUCAF	*18:01		-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-	-
32	9297	HAG	*41:02		-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	+	-	-
33	9098	MT14B	*40:01		-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	+	-	-	-
34	9104	DHIF	*38:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
35	9302	SSTO	*44:02		-	-	-	-	-	+	+	-	-	-	-	-	-	-	+	-	-	-	-
36	9024	KT17	*15:01	*35:01	-	-	-	-	-	+	-	-	-	-	-	-	+	+	-	+	-	-	-
37	9065	HHKB	*07:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-
38	9099	LZL	*15:01		-	-	-	-	-	+	-	-	-	-	-	-	-	+	-	+	-	-	-
39	9315	CML	*08:01	*27:05	-	-	-	-	-	+	-	-	-	-	-	-	-	-	+	+	+	+	+
40	9134	WHONP199	*13:02	*46:01	-	-	-	-	-	+	-	-	-	-	-	-	+	+	+	+	+	-	-
41	9055	H0301	*14:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
42	9066	TAB089	*46:01		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-
43	9076	T7526	*46:01		-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-
44	9057	TEM	*38:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
45	9239	SHJO	*42:01	*50:01	-	-	+	-	+	+	-	-	+	-	-	-	-	-	-	+	+	-	-
46	9013	SCHU	*07:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-
47	9045	TUBO	*51:01		-	-	+	+	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-
48	9303	TER-ND	*35:01	*44:03	-	-	-	-	-	+	-	-	-	-	-	-	+	-	+	+	-	-	-

101.702-24/06 – including *Taq* pol., IFU-01
101.702-24u/06u – without *Taq* pol., IFU-02

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“Instructions for Use” (IFU)

Lot No.: **4K4**

Lot-specific information

¹The provided cell line HLA specificities are retrieved from the <http://www.ihwg.org/hla> web site. The specificity of an individual cell line may thus be subject to change.

²The specificity of each primer solution in the kit has been tested against 48 well characterized cell line DNAs and where applicable, additional cell line DNAs.

One or more 5'-primers and 3'-primers in primer solutions 27, 30, 35, 38, 43, 53, 55, 64 and 65 were tested by separately adding one or two additional 3'-primers, respectively one or two additional 5'-primers. One or more 3'-primers in primer solutions 26, 28, 32, 37, 39, 42 and 58 were tested by separately adding one, two or three additional 5'-primers. One or more 5'-primers in primer solutions 25, 45, 49, 50 and 72 were tested by separately adding one or two additional 3'-primers.

In primer mixes 35, 41, 55, 66 and 67 one or two 5'-primers were not possible to test, and in primer mixes 27, 46, 51, 53, 62, 63, 66 and 70 one or two 3'-primer were not possible to test.

101.702-24/06 – including *Taq* pol., IFU-01
101.702-24u/06u – without *Taq* pol., IFU-02

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“Instructions for Use” (IFU)

Lot No.: **4K4**

Lot-specific information

CELL LINE VALIDATION SHEET																					
HLA-C low resolution SSP primer set ²																					
					Prod. No.:	Well															
						73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
						201786701	201786702	201786703	201786704	201786705	201786706	201786707	201786708	201786709	201786710	201786711	201786712	201550813	201786714	201673015	201897416
	IHWC cell line ¹		C*																		
1	9001	SA	*07:02			-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
2	9280	LK707	*07:01	*15:05		-	-	+	-	-	-	-	-	+	-	+	-	-	-	+	-
3	9011	E4181324	*12:02			-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-
4	9275	GU373	*03:04	*04:01		-	-	+	+	-	+	-	-	-	-	+	-	+	-	-	-
5	9009	KAS011	*06:02			-	-	-	-	-	-	-	+	-	-	+	-	-	+	-	-
6	9353	SM	*03:04	*07:02		-	-	+	+	-	-	-	-	+	-	-	-	-	-	-	-
7	9020	QBL	*05:01			-	-	-	-	-	-	+	-	-	-	+	-	-	-	+	-
8	9007	DEM	*04:01			-	-	-	-	-	+	-	-	-	-	+	-	+	-	-	-
9	9026	YAR	*12:03			-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-
10	9107	LKT3	*01:02			+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	9051	PITOUT	*16:01			-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-
12	9052	DBB	*06:02			-	-	-	-	-	-	-	+	-	-	+	-	-	+	-	-
13	9004	JESTHOM	*01:02			+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071	OLGA	*01:02	*03:04		+	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
15	9075	DKB	*03:04			-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
16	9037	SWEIG007	*02:02			-	+	+	-	-	+	-	-	-	-	-	-	-	-	+	-
17	9282	CTM3953540	*03:03	*07:01		-	-	-	+	+	-	-	-	+	-	-	-	-	-	-	-
18	9257	32367	*01:02	*07:05		+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
19	9038	BM16	*07:01			-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
20	9059	SLE005	*03:04			-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
21	9064	AMALA	*03:03			-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-
22	9056	KOSE	*12:03			-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-
23	9124	IHL	*01:02	*15:02		+	-	+	-	-	-	-	+	-	-	+	-	-	-	+	-
24	9035	JBUSH	*12:03			-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-
25	9049	IBW9	*08:02			-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
26	9285	WT49	*07:01			-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
27	9191	CH1007	*07:04	*15:05		-	-	+	-	-	-	-	-	+	-	+	-	-	-	+	-
28	9320	BEL5GB	*05:01	*16:01		-	-	-	-	-	-	+	-	-	-	+	-	+	-	+	-
29	9050	MOU	*16:01			-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-
30	9021	RSH	*17:01			-	+	-	-	-	-	-	-	-	-	+	-	-	-	+	-
31	9019	DUCAF	*05:01			-	-	-	-	-	-	+	-	-	-	+	-	-	-	+	-
32	9297	HAG	*17:01	*17:03		-	+	-	-	-	-	-	-	-	-	+	-	-	-	+	-
33	9098	MT14B	*03:04			-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-
34	9104	DHIF	*12:03			-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-
35	9302	SSTO	*05:01			-	-	-	-	-	-	+	-	-	-	+	-	-	-	+	-
36	9024	KT17	*03:03	*04:01		-	-	-	+	+	+	-	-	-	-	+	-	+	-	-	-
37	9065	HHKB	*07:02			-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
38	9099	LZL	*03:03			-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-
39	9315	CML	*02:02	*07:01		-	+	+	-	-	+	-	-	+	-	+	-	-	-	+	-
40	9134	WHONP199	*01:02	*06:02		+	-	-	-	-	-	-	+	-	-	+	-	-	+	-	-
41	9055	H0301	*08:02			-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
42	9066	TAB089	*01:02			+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076	T7526	*01:02	*08:01		+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
44	9057	TEM	*12:03			-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-
45	9239	SHJO	*06:02	*17:01		-	+	-	-	-	-	-	+	-	-	+	-	-	+	+	-
46	9013	SCHU	*07:02			-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
47	9045	TUBO	*07:04	*15:02		-	-	+	-	-	-	-	+	+	-	+	-	-	-	+	-
48	9303	TER-ND	*04:01	*16:01		-	-	-	-	-	+	-	-	-	-	+	-	+	-	-	-

101.702-24/06 – including *Taq* pol., IFU-01
101.702-24u/06u – without *Taq* pol., IFU-02

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“Instructions for Use” (IFU)

Lot No.: **4K4**

Lot-specific information

CELL LINE VALIDATION SHEET									
HLA-C low resolution SSP primer set ²									
						Well			
						89	90	91	92
					Prod. No.:	201786717	201786718	201890119	201786720
						201786721	201909122	201911923	
	IHWC cell line ¹	C*							
1	9001 SA	*07:02				-	-	-	-
2	9280 LK707	*07:01	*15:05			+	-	-	+
3	9011 E4181324	*12:02				-	-	-	-
4	9275 GU373	*03:04	*04:01			-	+	-	+
5	9009 KAS011	*06:02				-	-	-	+
6	9353 SM	*03:04	*07:02			-	-	-	+
7	9020 QBL	*05:01				-	-	-	+
8	9007 DEM	*04:01				-	+	-	+
9	9026 YAR	*12:03				-	-	-	-
10	9107 LKT3	*01:02				-	-	-	+
11	9051 PITOUT	*16:01				-	+	-	-
12	9052 DBB	*06:02				-	-	-	+
13	9004 JESTHOM	*01:02				-	-	-	+
14	9071 OLGA	*01:02	*03:04			-	-	-	+
15	9075 DKB	*03:04				-	-	-	+
16	9037 SWEIG007	*02:02				-	-	-	-
17	9282 CTM3953540	*03:03	*07:01			-	-	-	+
18	9257 32367	*01:02	*07:05			-	-	-	+
19	9038 BM16	*07:01				-	-	-	+
20	9059 SLE005	*03:04				-	-	-	+
21	9064 AMALA	*03:03				-	-	-	+
22	9056 KOSE	*12:03				-	-	-	-
23	9124 IHL	*01:02	*15:02			+	-	-	+
24	9035 JBUSH	*12:03				-	-	-	-
25	9049 IBW9	*08:02				-	-	-	+
26	9285 WT49	*07:01				-	-	-	+
27	9191 CH1007	*07:04	*15:05			+	-	-	+
28	9320 BEL5GB	*05:01	*16:01			-	+	-	+
29	9050 MOU	*16:01				-	+	-	+
30	9021 RSH	*17:01				-	-	+	-
31	9019 DUCAF	*05:01				-	-	-	+
32	9297 HAG	*17:01	*17:03			-	-	+	-
33	9098 MT14B	*03:04				-	-	-	+
34	9104 DHIF	*12:03				-	-	-	-
35	9302 SSTO	*05:01				-	-	-	+
36	9024 KT17	*03:03	*04:01			-	+	-	+
37	9065 HHKB	*07:02				-	-	-	+
38	9099 LZL	*03:03				-	-	-	+
39	9315 CML	*02:02	*07:01			-	-	-	+
40	9134 WHONP199	*01:02	*06:02			-	-	-	+
41	9055 H0301	*08:02				-	-	-	+
42	9066 TAB089	*01:02				-	-	-	-
43	9076 T7526	*01:02	*08:01			-	+	-	+
44	9057 TEM	*12:03				-	-	-	-
45	9239 SHJO	*06:02	*17:01			-	-	+	-
46	9013 SCHU	*07:02				-	-	-	+
47	9045 TUBO	*07:04	*15:02			+	-	-	+
48	9303 TER-ND	*04:01	*16:01			-	+	-	+

101.702-24/06 – including *Taq* pol., IFU-01
101.702-24u/06u – without *Taq* pol., IFU-02

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“Instructions for Use” (IFU)

Lot No.: 4K4

Lot-specific information

¹The provided cell line HLA specificities are retrieved from the <http://www.ihwg.org/hla> web site. The specificity of an individual cell line may thus be subject to change.

²The specificity of each primer solution in the kit has been tested against 48 well characterized cell line DNAs and where applicable, additional cell line DNAs.

One or more 5'-primers and 3'-primers in primer solutions 73, 74, 76, 79, 86 to 88, 92 and 94 were tested by separately adding one, two or three additional 3'-primers, respectively one or two additional 5'-primers. One or more 3'-primers in primer solutions 80, 83, 90 and 91 were tested by separately adding one or two additional 5'-primers. One or more 5'-primers in primer solutions 78, 85 and 95 were tested by separately adding one, two or three additional 3'-primers.

In primer solutions 73, 88 and 95 one or more 5'-primers were not possible to test, and in primer solutions 75, 79, 83 to 88 and 90 one or more 3'-primers were not possible to test.

101.702-24/06 – including *Taq* pol., IFU-01
101.702-24u/06u – without *Taq* pol., IFU-02

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Lot No.: 4K4

Lot-specific information

101.702-24/06 – including *Taq* pol., IFU-01
101.702-24u/06u – without *Taq* pol., IFU-02

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Lot No.: 4K4

Lot-specific information

101.702-24/06 – including *Taq* pol., IFU-01
101.702-24u/06u – without *Taq* pol., IFU-02

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Lot No.: 4K4

Lot-specific information

101.702-24/06 – including *Taq* pol., IFU-01
 101.702-24u/06u – without *Taq* pol., IFU-02

Visit Visit <https://labproducts.caredx.com> for
 “Instructions for Use” (IFU)

Lot No.: **4K4**

Lot-specific information

ADDRESSES:

Manufacturer:

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Tel: +46-8-508 939 00

Fax: +46-8-717 88 18

E-mail: orders-se@caredx.com

Web page: <https://labproducts.caredx.com/>

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